DSC-F828

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Revision History

How to use
Acrobat Reader

SECTION 6
ADJUSTMENTS

ADJ

Link

- Before starting adjustment
  - Adjusting items when replacing main parts and boards
- CAMERA SECTION ADJUSTMENT
  - PREPARATIONS BEFORE ADJUSTMENT
  - INITIALIZATION OF DATA
  - VIDEO SYSTEM ADJUSTMENTS
  - CAMERA SYSTEM ADJUSTMENTS
  - COLOR ELECTRONIC VIEW FINDER ADJUSTMENT
  - LCD SYSTEM ADJUSTMENT
- SERVICE MODE
  - APPLICATION FOR ADJUSTMENT (SEUS)
  - SERVICE MODE

Note: Be sure to carry out “Data Save”.

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1. SERVICE NOTE	○	×
2. DISASSEMBLY	○	×
3. BLOCK DIAGRAMS	OVERALL POWER	×
4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS	DD-204, LR-018, ST-088, LS-067, MT-067, SI-037, UA-003, LB-091, CF-097, SW-410, AJ-007 BOARD CONTROL SWITCH BLOCK (TOP)/(MID)/(UNDER)	SY-096 BOARD
5. REPAIR PARTS LIST	EXPLODED VIEWS	×
	ELECTRICAL PARTS	○ (SY-096 BOARD)

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* Color reproduction frame is shown on page 6-43.
* AF illumination frame is shown on page 6-44.

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SECTION 6
ADJUSTMENTS

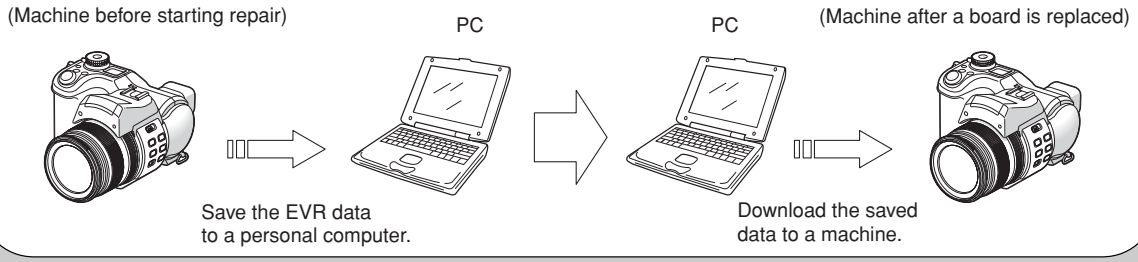
1. Before starting adjustment

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

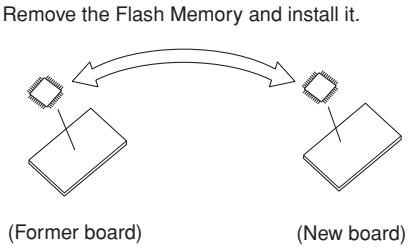
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



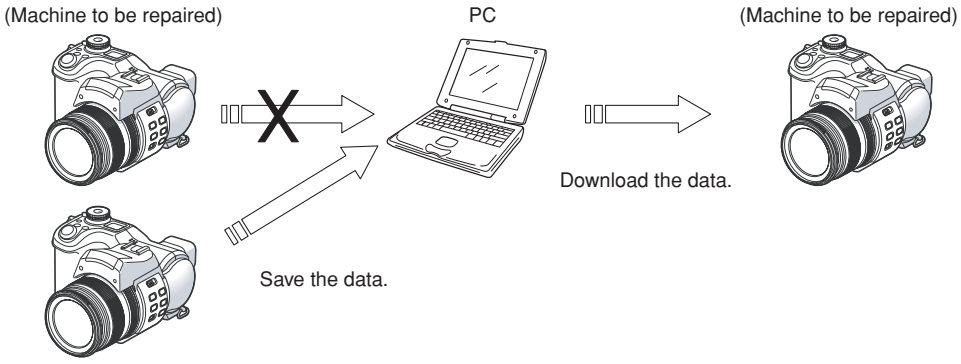
Procedure 2

Remove the Flash Memory from the board of the machine that is going to be repaired. Install the removed Flash Memory to the replaced board.



Procedure 3

When the data cannot be saved due to defective Flash Memory, or when the Flash Memory cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 6-3 for the items to be checked.)

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1-1. Adjusting items when replacing main parts and boards

When replacing main parts and boards, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced parts: Block replacement: Lens device	Xenon tube	EVF block LCD unit (LCD902)	LCD block LCD unit (LCD901)	LCD block Back light unit	Mounted Parts replacement: LB-091 board D001 (EVF back light)	LS-067 board D001 (Laser unit)	SY-096 board IC301 (Camera DSP)	SY-096 board IC303 (Video amp.)	SY-096 board IC801 (LCD DRIVER)	SY-096 board IC902 (EVF DRIVER)	Board replacement: LB-091 board (COMPLETE)	LS-067 board (COMPLETE)	SY-096 board (COMPLETE)	EEPROM replacement: SY-096 board IC501 (Camera DSP) (With built-in flash memory)
Initialization of data	Initialization of data														●	●
Video	Video output level adj.								●	●					●	●
Camera	Iris reset sensor adj.	●													●	●
	Flange back adj.	●													●	●
	Color shade check	●													●	●
	F No. compensation	●													●	●
	Mechanical shutter adj.	●													●	●
	Light value adj.	●													●	●
	Linear matrix and AWB adj.	●													●	●
	Color reproduction check	●													●	●
	CCD linearity check	●													●	●
	CCD white defect compensation check	●													●	●
	CCD black defect compensation check	●													●	●
	Strobe adj.	●	●												●	●
	AF laser output adj.	●						●						●	●	●
EVF	EVF initial data input														●	●
	VCO adj.											●			●	●
	Bright adj.											●			●	●
	Contrast adj.								●			●			●	●
	V COM adj.											●			●	●
	White balance adj.			●			●					●	●		●	●
LCD	LCD initial data input														●	●
	VCO adj.										●				●	●
	Contrast adj.								●		●				●	●
	V COM adj.				●						●				●	●
	White balance adj.				●	●					●				●	●

Table. 6-1-1.

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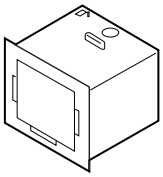
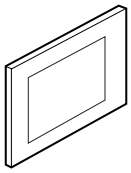
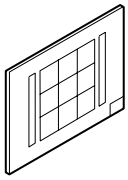
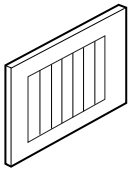
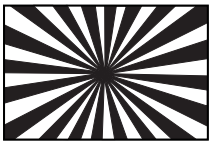
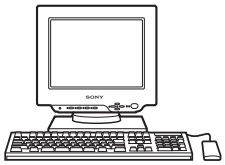
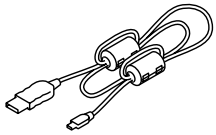
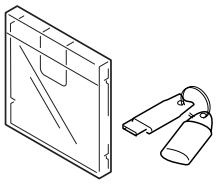
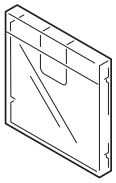
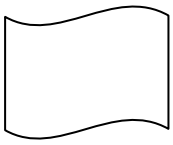
6-1. CAMERA SECTION ADJUSTMENT

1-1. PREPARATIONS BEFORE ADJUSTMENT

1-1-1. List of Service Tools

• Oscilloscope • Color monitor • Vectorscope • AC power adapter
• Calculator which can hexadecimal calculation

J-1  Pattern box PTB-1450 J-6082-557-A or Pattern box PTB-450 J-6082-200-A	J-2  Clear chart for pattern box For PTB-1450: J-6082-560-A For PTB-450: J-6080-621-A	J-3  9 colors chart for pattern box For PTB-1450: J-6082-562-A
J-4  Color chart for pattern box For PTB-1450: J-6082-559-A For PTB-450: J-6020-250-A	J-5  Siemens star chart J-6080-875-A	J-6  Personal computer with Widows98/ 98SE/ME/2000/ XP installed and with two USB ports
J-7  USB cable 1-827-038-11	J-8  Application for adjustment (SEUS) and HASP key (Note)	J-9  F828 C1 MATRIX Adjustment (Note)
J-10  Background paper J-2501-130-A		

Note: Contact our service headquarter of each area how to get the application for adjustment (SEUS), HASP key and F828 C1 MATRIX Adjustment.

Fig. 6-1-1.

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1-1-2. Preparations

1) Connect the equipment for adjustments according to Fig. 6-1-4.
2) Set the MS/CF switch to MS (Memory stick).
3) Start up the application for adjustment (SEUS).

Note1: Setting the "Forced Power ON Mode (Forced STILL Mode)"
1) Select page: 00, address: 01, and set data: 01.
2) Select page: 2F, address: 23, and write data: 11.
3) Save the data.
4) Wait for 2 sec.
The above procedure will enable the power (STILL mode) to be turned on with POWER switch (Control switch block (TOP)) disconnected. After completing adjustments, be sure to exit the "Forced Power ON Mode".

Note2: Setting the "Forced Power ON Mode (Forced PLAY Mode)"
1) Select page: 00, address: 01, and set data: 01.
2) Select page: 2F, address: 23, and write data: 12.
3) Save the data.
4) Wait for 2 sec.
The above procedure will enable the power (PALY mode) to be turned on with POWER switch (Control switch block (TOP)) disconnected. After completing adjustments, be sure to exit the "Forced Power ON Mode".

Note3: Exiting the "Forced Power ON Mode"
1) Select page: 00, address: 01, and set data: 01.
2) Select page: 2F, address: 23, and write data: 80.
3) Save the data.
4) Wait for 2 sec.
5) Select page: 00, address: 01, and set data: 00.

1-1-3. Discharging of the flashlight power supply

The capacitor which is used as power supply of flashlight is charged with 200V to 300V voltage. When disassembling the unit, discharge this voltage in order to protect service engineers from electric shock.

Discharge procedure

1. Remove the power supply (AC power adaptor or battery).
2. Fabricate the discharging jig as shown in Fig. 6-1-3. locally by yourself. Connect the discharging jig to the positive (+) and negative (–) terminal of the flash voltage charge capacitor. Allow ten seconds to discharge the voltage.

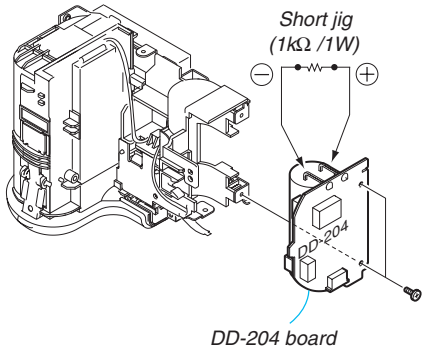

Fig. 6-1-3.

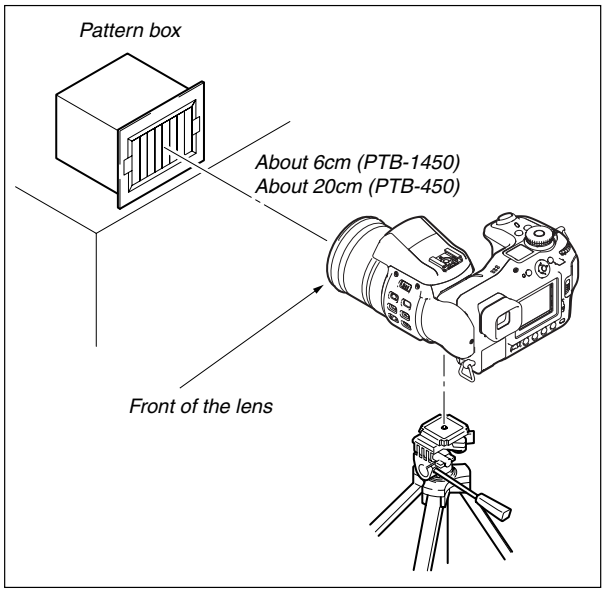

Fig. 6-1-2.

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[CONNECTION OF EQUIPMENT]

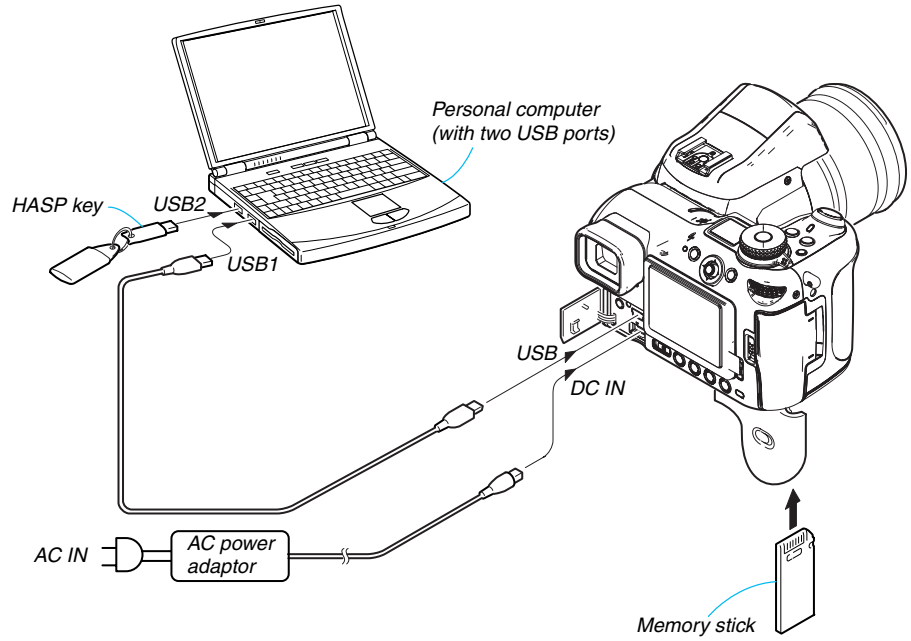

Fig. 6-1-4.

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1-1-4. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments.

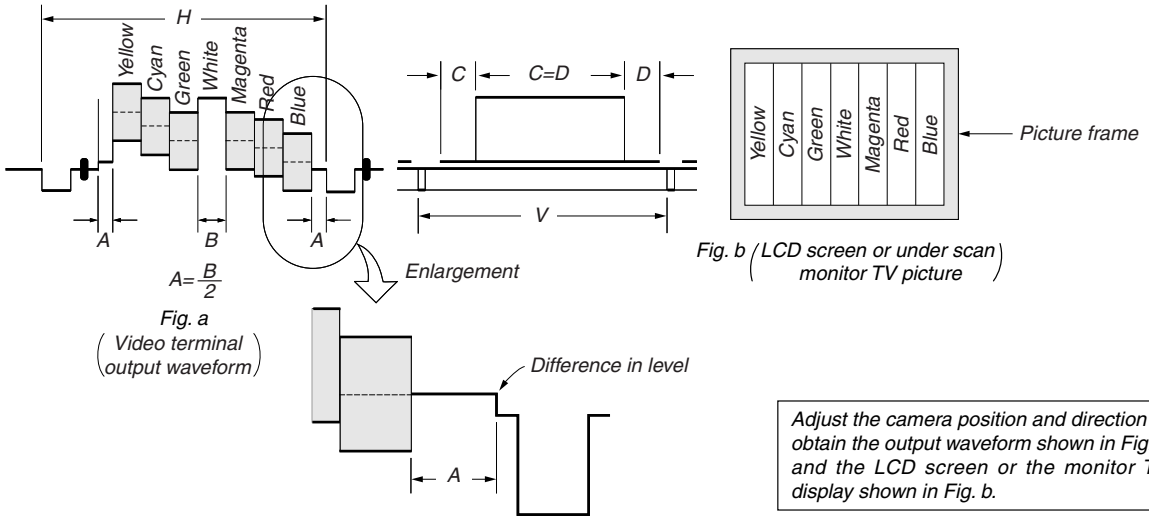
Switch settings

1. Mode dial ..... STILL (P AUTO) (**P**)
2. ZOOM ..... WIDE end
3. MS/CF ..... MS (Memory stick)
4. MACRO ( ) ..... ON
5. WHITE BALANCE ..... AUTO
6. EV 0EV
7. FOCUS ..... AUTO
8. USB CONNECT (SET UP setting) ..... NORMAL
9. VIDEO OUT (SET UP setting) ..... NTSC

2. Order of Adjustments

Basically carry out adjustments in the order given.

Color bar chart (Standard picture frame) (PTB-450)



9 colors chart (Standard picture frame) (PTB-1450)

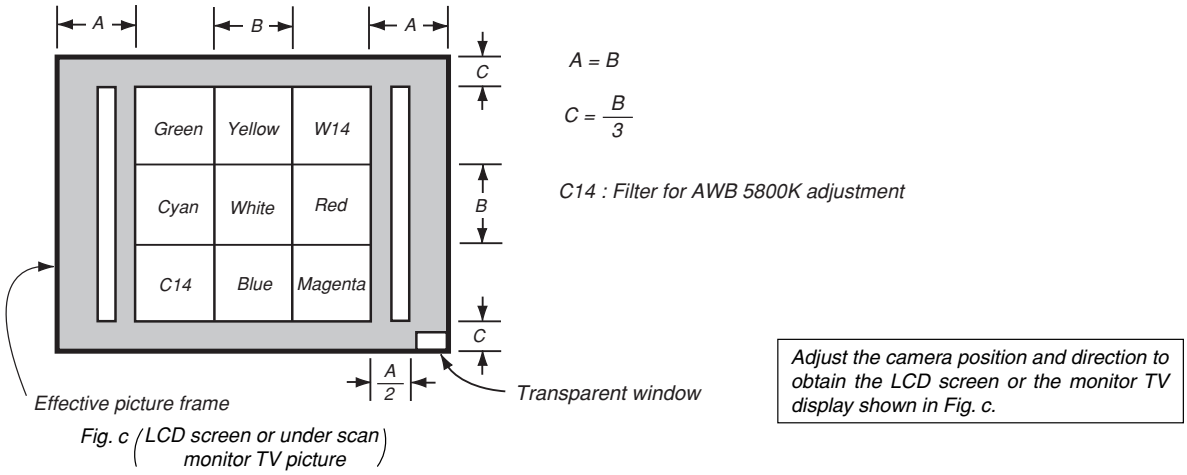


Fig.6-1-5.

3. Subjects

1) Color bar chart (Standard picture frame) (PTB-450)
When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 6-1-5. (Standard picture frame)
2) 9 colors chart (Standard picture frame) (PTB-1450)
When performing adjustments using the 9 colors chart, adjust the picture frame as shown in Fig. 6-1-5. (Standard picture frame)
3) Clear chart (Standard picture frame) (PTB-450/PTB-1450)
Remove the color bar chart (PTB-450) or 9 colors chart (PTB-1450) from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time.)

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4. Preparing the Flash Adjustment Box

A dark room is required to provide an accurate strobe adjustment.
If it is not available, prepare the flash adjustment box as given below;

1) Provide woody board A, B and C of 15 mm thickness.

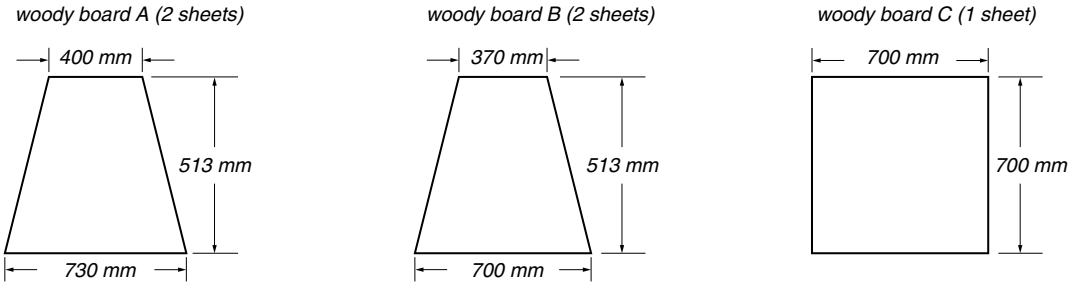

Fig. 6-1-6.

2) Apply black mat paint to one side of woody board A and B.
3) Attach background paper (J-2501-130-A) to woody board C.
4) Assemble so that the black sides and the background paper side of woody board A, B and C are internal. (Fig. 6-1-7.)

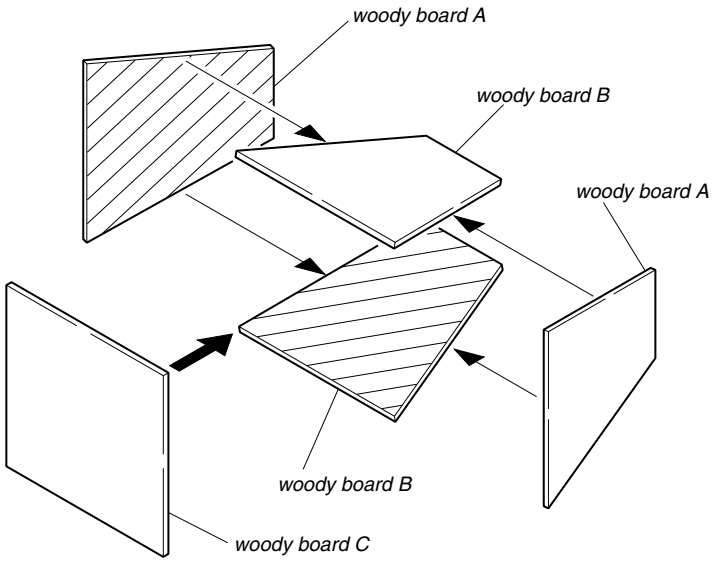

Fig. 6-1-7.

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1-2. INITIALIZATION OF DATA

1-2-1. INITIALIZATION OF DATA

1. Initializing All Pages Data

By performing the following procedure, data of all the pages will be initialized.

Initializing Method:

1) Select page: 00, address: 01, and set data: 01.
2) Click [Sector Write] on the SEUS screen to display the SEUS SECTOR WRITE screen.
3) Check that the SET ID is “03”.
4) Click [All] of the ALL SELECT buttons to select all pages. (Fig. 6-1-8. Ⓐ)
5) Click [Write] to write the initializing data to the EEPROM of the camera.
6) Wait for 2 sec.
7) Click [Close] to close the SEUS PAGE EDIT screen.

Modification of 4F, 8E Page Data

If all page data have been initialized, change the data of the “Fixed data-2” address shown in the following tables by manual input.

1) Select page: 00, address: 01, and set data: 01.
2) Click [Page] on the SEUS screen, and input “4F” or “8E”.
3) Click [Address], and input the “Fixed data-2” address.
4) Click [Set], and input the new data.
   Note: New data for changing are not shown in the table because they are different in destination. When changing the data, copy the data built in the same model. If copy the data built in the different model, the camera may not operate.
5) Repeat steps 2 to 4 until all data of the “Fixed data-2” addresses are changed.
6) Click [Save] to write the changed data to the EEPROM of the camera.
7) Wait for 2 sec.

Processing after Completing Initializing of data

Order	Page	Address	Data	Procedure
1	20	00	29	Set the data.
2	20	01	29	Set the data.
3				Check “Receive Paket Error” is displayed on the SEUS screen.
4				Turn on the power of the camera.
5				Click [Connect] on the SEUS screen.

2. Initializing Single Page Data

By performing the following procedure, data of the page that you want to initialize will be initialized.

Initializing Method:

1) Select page: 00, address: 01, and set data: 01.
2) Click [Sector Write] on the SEUS screen to display the SEUS SECTOR WRITE screen.
3) Check that the SET ID is “03”.
4) Click [All] of the option buttons of the target page. (Fig. 6-1-8. Ⓑ)
5) Click [Write] to write the initializing data to the EEPROM of the camera.
6) Wait for 2 sec.
7) Click [Close] to close the SEUS PAGE EDIT screen.

Note: When 4F page or 8E page is initialized, perform “Modification of 4F, 8E Page Data”. (Refer to “1. Initializing All Pages Data”.)

Processing after Completing Initializing of data

Order	Page	Address	Data	Procedure
1	20	00	29	Set the data.
2	20	01	29	Set the data.
3				Check “Receive Paket Error” is displayed on the SEUS screen.
4				Turn on the power of the camera.
5				Click [Connect] on the SEUS screen.

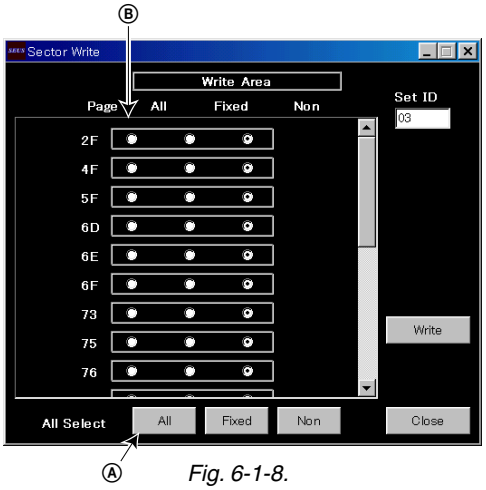

Fig. 6-1-8.

3. 2F Page Adjustment Address

Address	Initial value	Remark
23	80	Test mode

Table. 6-1-2.

4. 4F Page Adjustment Address

Address	Initial value	Remark
46		Fixed data-2
47		Fixed data-2
88		Fixed data-2
94	00	Recording counter (Refer to “Record of Use check” of “SERVICE MODE”(Page 6-42).)
95	00	
96	00	
97	00	
A1		Fixed data-2

Table. 6-1-3.

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5. 6E Page Adjustment Address

Address	Initial value	Remark
04	1D	AWB 3200K/5800K standard data input
05	00	
06	07	
07	00	
08	1B	
09	00	
0A	08	
0B	00	
0C	1D	
0D	00	
0E	07	
0F	00	
10	1B	
11	00	
12	08	
13	00	
14	1C	
15	00	
16	07	
17	00	
18	1B	
19	00	
1A	08	
1B	00	
1C	00	
1D	00	
1E	00	
1F	00	
20	00	
21	00	
24	0E	
25	00	
26	0E	
27	00	
28	0D	
29	00	
2A	0F	
2B	00	
2C	0E	
2D	00	
2E	0E	
2F	00	
30	0D	
31	00	
32	0F	
33	00	
34	0E	
35	00	
36	0E	
37	00	
38	0D	
39	00	
3A	0F	
3B	00	
3C	00	AWB 3200K/5800K standard data input
3D	00	
3E	00	
3F	00	
40	00	
41	00	
42	00	
43	00	
44	00	
45	00	
46	00	
47	00	
48	00	
49	00	
72	0C	Strobe adj.
73	00	
74	10	
75	00	
80	10	Linear matrix adj.
81	00	
82	00	
83	00	
84	00	
85	00	
86	00	
87	00	
88	00	
89	00	
8A	10	
8B	00	
8C	00	
8D	00	
8E	00	
8F	00	
90	00	
91	00	
92	00	
93	00	
94	10	
95	00	
96	00	
97	00	
98	00	
99	00	
9A	00	
9B	00	
9C	00	
9D	00	
9E	10	
9F	00	

Table. 6-1-4.

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6. 6F Page Adjustment Address

Address	Initial value	Remark
06	40	Color shade check
07	00	
10	40	AF laser output adj.
11	FF	
12	FF	
13	FF	
14	00	
15	3A	
16	FF	
18	00	Flange back adj.
19	00	
1A	00	
1B	00	
1C	17	
1D	80	
1E	00	
1F	00	
20	19	
21	00	
22	00	
23	00	
24	26	
25	26	
26	82	
27	08	
28	03	
29	00	
2A	00	
2B	00	
2C	00	
2D	00	
2E	00	
2F	00	
30	00	
31	00	
32	00	
33	00	
34	00	
35	00	
36	00	
37	00	
38	00	
39	00	
3A	00	
3B	00	
3C	00	
3D	00	
3E	FF	
40	40	Flange back adj.
41	41	
42	42	
43	43	
44	44	
45	45	
46	46	Flange back adj.
47	47	
48	48	
49	49	
4A	4A	
4B	4B	
4C	4C	
4D	4D	
4E	4E	
4F	4F	
50	50	
51	51	
52	00	
53	00	
54	00	Auto focus illumination adj
5E	E0	IRIS reset sensor adj.
5F	80	
60	00	F No. compensation
61	00	
62	00	
63	00	
64	00	
65	30	Light value adj.
66	FE	
67	6D	
6B	FF	F No. compensation/
6C	00	Mechanical shutter adj.
6D	00	
B8	09	Mechanical shutter adj.
B9	AC	
BA	09	
BB	B4	
BC	09	
BD	BD	
BE	09	
BF	A2	
C0	09	
C1	C3	
C2	00	
C3	00	
C4	00	
C5	00	
C6	00	
C7	37	
C8	2E	
C9	21	
CA	15	
CB	15	
CC	80	
CD	88	
CE	98	
CF	90	
D0	88	
D1	00	
D2	00	

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6F page

Address	Initial value	Remark
D3	00	Mechanical shutter adj.
D4	00	
D5	00	
D6	00	
D7	14	
D8	FF	Strobe adj.
D9	FF	
DA	FF	
DB	00	
DC	00	
DD	00	
DE	00	
DF	00	
E0	00	
E1	00	
E2	00	
E3	00	
E4	00	
E5	00	
E6	00	
E7	00	
E8	00	
E9	00	
EA	00	
EB	00	
EC	00	
ED	00	
EE	00	
EF	00	

Table. 6-1-5.

7. 8E Page Adjustment Address

Address	Initial value	Remark
C8		Fixed data-2

Table. 6-1-6.

8. 8F Page Adjustment Address

Address	Initial value	Remark
23	80	VCO adj. (LCD)
24	76	V COM adj. (LCD)
28	90	White balance adj. (LCD)
2A	80	
2C	72	Contrast adj. (LCD)
73	80	VCO adj. (EVF)
74	A4	V COM adj. (EVF)
75	8D	Bright adj. (EVF)
78	90	White balance adj. (EVF)
7A	80	
7C	38	Contrast adj. (EVF)
D0	80	Video output level adj.

Table. 6-1-7.

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1-3. VIDEO SYSTEM ADJUSTMENTS

1. Video Output Level Adjustment (SY-096 board)

Adjust the sync level of the composite video signal output.

Mode	PLAY (▶)
Signal	No signal
Measurement Point	Video terminal of AV OUT jack (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	8F
Adjustment Address	D0
Specified Value	Sync level: A=286 ± 5mV (NTSC mode) A=300 ± 5mV (PAL mode) Burst level: B=286 ± 30mV (NTSC mode) B=300 ± 30mV (PAL mode)

Switch setting:

VIDEO OUT (SETUP 2)..... (NTSC mode)
..... (PAL mode)

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	60	C1		Read the data, and check it is “01”.
3	80	70	01	Set the data.
4	8F	D0		Change the data and set the sync level (A) to the specified value.
5				Check that the burst level (B) satisfies the specified value.
6	80	70	00	Write the data.
7				Save the data.
8				Wait for 2 sec.
9	00	01	00	Set the data.

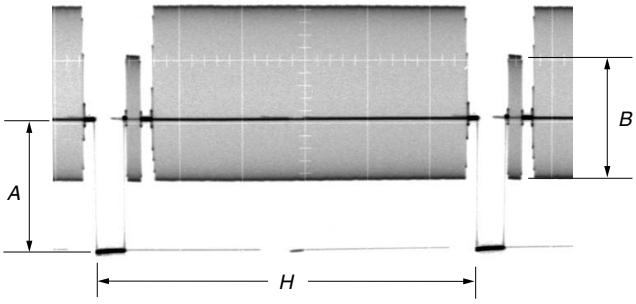

Fig. 6-1-9.

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1-4. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, check that the specified values of "VIDEO SYSTEM ADJUSTMENT" are satisfied.

1. Data Setting during Camera System Adjustments

Perform the following data setting before the camera system adjustments.

Note1: When the power is turned off, some data settings will be released. So perform this data setting again when the power is turned off.

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	4F	B7	01	Set the data.
3	2F	23	11	Set the data.
4	60	C1		Read the data, and check it is "02".
5	80	70	01	Set the data.
6	60	6C	01	Set the data.
7	60	2C	01	Set the data.
8	4F	B9		Set Bit 0 of the data to "1". (Note2)
9	7F	0E	20	Set the data.
10	7F	6A	20	Set the data.
11				Save the data.
12				Wait for 2 sec.

Note2: For the bit values, refer to "6-2. SERVICE MODE", "2-2-2. Bit value discrimination".

After completing the camera system adjustments, release the data setting.

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	4F	B7	00	Set the data.
3	4F	B9		Set Bit 0 of the data to "0". (Note2)
4	2F	23	80	Set the data.
5				Save the data.
6				Wait for 2 sec.
7	00	01	00	Set the data.

2. IRIS Reset Sensor Adjustment

Measuring the iris reset sensor output voltage, and compensate the dispersion of the reset position detecting voltage.

Mode	STILL (P AUTO) (**P**)
Subject	Clear chart
Measurement Point	Data of page 6F, address: 5E, 6B
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	5E, 5F
Specified Value1	00
Specified Value2	80 to FF

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and set data: 00.

Switch setting:

ZOOM ..... WIDE end

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the ZOOM is WIDE end.
3	60	01	6F	Set the data.
4				Wait for 5 sec.
5	60	02		Read the data, and check it is "01". (Note2)
6				Wait for 2 sec.
7	6F	6B		Read the data, and check it satisfies the specified value 1.
8	6F	5E		Read the data, and check it satisfies the specified value 2.

Note2: The adjustment data will be automatically input to page: 6F, address: 5E, 5F.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Set the data.
2				Turn off the power and back on.
3				Perform "Flange Back Adjustment".
4				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

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3. Flange Back Adjustment

To adjust the flange back, compensate the dispersion of the zoom position A/D value at WIDE end and TELE end.

Mode	STILL (P AUTO) (**P**)
Subject	Arbitrary
Measurement Point	Data of page: 6F, address: 24, 25, 3E
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	18 to 3E, 40 to 53
Specified value1	00
Specified value2	0A to 40

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and set data: 00.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2	60	00	37	Set the data.
3	60	01	37	Set the data.
4				Wait for 4 sec.
5	60	02		Read the data, and check it is "01".
6				Wait for 2 sec.
7	60	00	00	Set the data.
8	60	01	00	Set the data.
9				Set the ZOOM to the WIDE end.
10	60	01	13	Set the data.
11				Wait for 1 sec.
12	60	01	B1	Set the data.
13				Wait for 1 sec.
14	60	02		Read the data, and check it is "01". (Note2)
15				Set the ZOOM to the TELE end.
16	60	01	13	Set the data.
17				Wait for 1 sec.
18	60	01	B3	Set the data.
19				Wait for 1 sec.
20	60	02		Read the data, and check it is "01". (Note2)
21	60	01	00	Set the data.
22				Wait for 2 sec.
23	6F	3E		Read the data, and check it satisfies the specified value 1.
24	6F	24		Read the data, and check it satisfies the specified value 2.
25	6F	25		Read the data, and check it satisfies the specified value 2.

Note2: The adjustment data will be automatically input to page: 6F, address: 18 to 3E, 40 to 53

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1				Perform "Flange Back Check".
2				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

4. Flange Back Check

Mode	STILL (P AUTO) (**P**)
Subject	Siemens star (1.0m from the front of the lens) (Luminance : 200 to 400 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Specified Value1	The lens is focused.
Specified Value2	Below 8% of diagonal length of the TV monitor (Note)

Note: Below 40mm when a 21 inches TV monitor is used.

Switch setting:

FOCUS ..... AUTO

Checking method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Place the siemens star 1.0m from the front of the lens.
3	60	2C	00	Set the data.
4	60	8C	30	Set the data.
5				Shoot the Siemens star with the zoom TELE end (200).
6				Check that center of the Siemens star is located in the center of the TV monitor screen.
7				Check that the lens is focused.
8	60	2C	01	Set the data.
9				For each of the zoom positions 135, 100, 70, 50 and 35, check that the lens is focused.
10				Shoot the Siemens star with the zoom WIDE end (28).
11				Check that the lens is focused.
12				Check that distance between the center of the Siemens star and the center of the TV monitor screen satisfies the specified value2.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	8C	00	Set the data.
2				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

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5. Picture Frame Setting (PTB-450)

Mode	STILL (P AUTO) (**P**)
Subject	Color bar chart and clear chart (Standard picture frame) About 20cm from the front of the lens
Measurement Point	Video terminal of A/V OUT jack
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=C=B/2, E=F

Switch setting:

ZOOM ..... WIDE end

Setting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Shoot the color bar chart with the zoom WIDE end.
3				Adjust the direction and distance between the pattern box and camera, and set the picture frame to the specified position.
4				Adjust the focus.
5				Remove the color bar chart and set the clear chart.
6				Check that the whole of the screen is white. If not, adjust the direction and distance slightly.
7	10	44		Read the data, and this data named YH.
8	10	45		Read the data, and this data named YL.
9				Perform the following adjustments.

How to reset the focus when it deviated:

If the focus deviated due to some reason reset it in the following method.

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2	60	90	00	Set the data.
3	60	91	00	Set the data.
4	60	92	YL	Set the data. (Note)
5	60	93	YH	Set the data. (Note)
6	60	01	79	Set the data.
7				Wait until the movement of the lens stops.
8	60	07		Read the data, and check it is "01".
9	60	01	00	Set the data.

Note: YH and YL are the data read in the "Setting method".

Check on an oscilloscope

1. Horizontal period

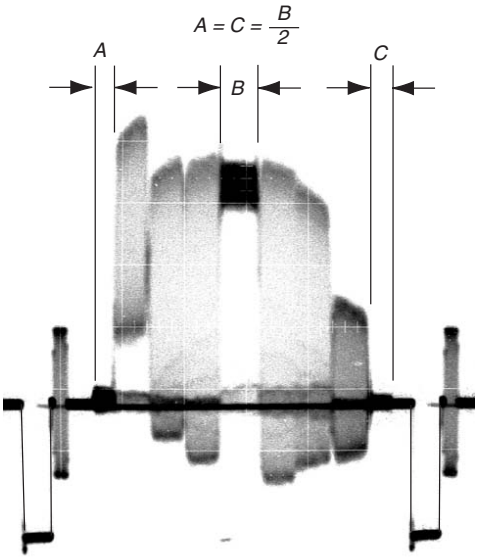

Fig. 6-1-10.

2. Vertical period

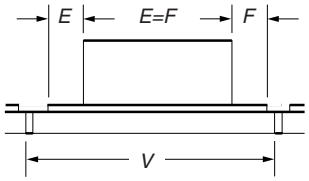

Fig. 6-1-11.

Check on the monitor TV (Underscanned mode)

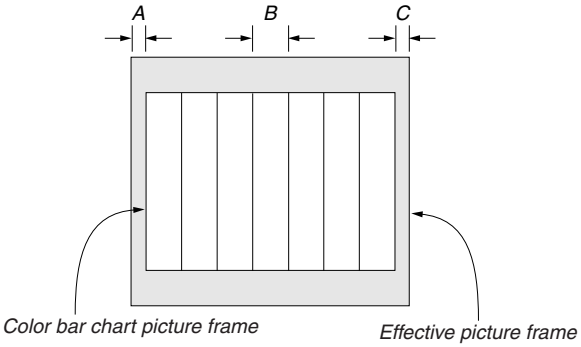

Fig. 6-1-12.

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6. Picture Frame Setting (PTB-1450)

Mode	STILL (P AUTO) (**P**)
Subject	9 colors chart and clear chart (Standard picture frame) (Note1) About 6cm from the front of the lens
Measurement Point	Video terminal of A/V OUT jack
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=B, C=B/3

Note1: Check that the transparent window is in the lower right.

Switch setting:

ZOOM ..... WIDE end

Setting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Shoot the 9 colors chart with the zoom WIDE end.
3				Adjust the direction and distance between the pattern box and camera, and set the picture frame to the specified position.
4				Adjust the focus.
5				Remove the 9 colors chart and set the clear chart.
6				Check that the whole of the screen is white. If not, adjust the direction and distance slightly.
7	10	44		Read the data, and this data named YH.
8	10	45		Read the data, and this data named YL.
9				Perform the following adjustments.

How to reset the focus when it deviated:

If the focus deviated due to some reason reset it in the following method.

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2	60	90	00	Set the data.
3	60	91	00	Set the data.
4	60	92	YL	Set the data. (Note2)
5	60	93	YH	Set the data. (Note2)
6	60	01	79	Set the data.
7				Wait until the movement of the lens stops.
8	60	07		Read the data, and check it is "01".
9	60	01	00	Set the data.

Note2: YH and YL are the data read in the "Setting method".

Check on an oscilloscope

1. Horizontal period

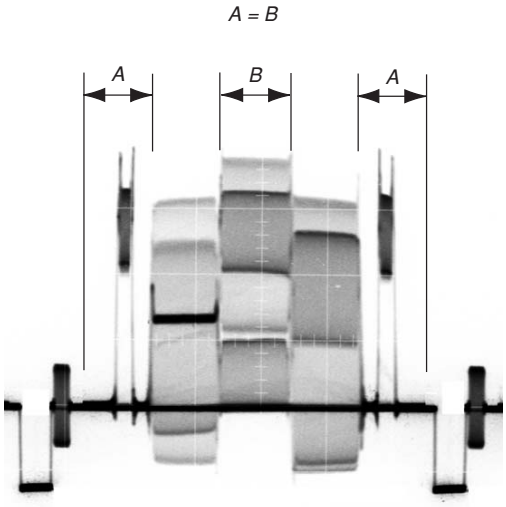

Fig. 6-1-13.

2. Vertical period

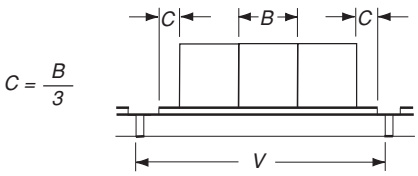

Fig. 6-1-14.

Check on the monitor TV (Underscanned mode) on the LCD screen

$A = B \qquad C = \frac{B}{3}$

C14 : Filter for AWB 5800K adjustment

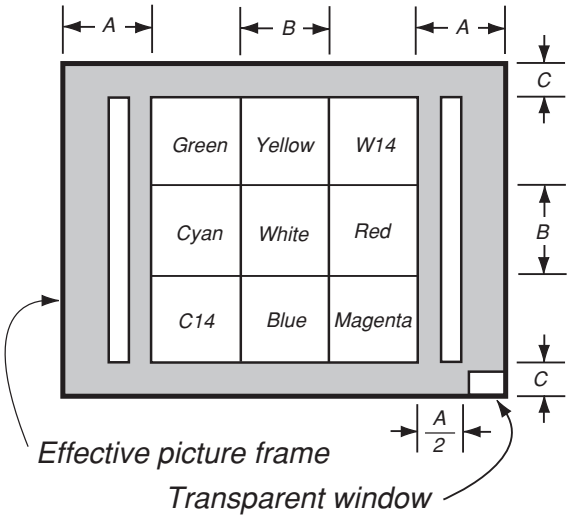

Fig. 6-1-15.

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7. Color Shade Check

7-1. Installing the "F828 C1 MATRIX ADJ"

Install the adjustment software "F828 C1 MATRIX ADJ" in the PC.

System requirements of the PC:

OS : Windows98/98SE/Me/2000/XP
RAM : Recommend 256MB or higher
USB : USB2.0 or USB1.1 (USB2.0 is recommended. Two USB connectors are required.)

Installing the "F828 C1 MATRIX ADJ":

1) Extract "828matrix.zip" file and obtain "Setup.exe" file.
2) Start up the "Setup.exe" and install the "F828 C1 MATRIX ADJ".

Note1: Contact our service headquarter of each area how to get the "828matrix.zip" file.

Note2: For "F828 C1 MATRIX ADJ" adjustment software's operating, the following two conditions need to be satisfied.
- The application for adjustment (SEUS) is already installed in the PC.
- The PC is equipped with the HASP key.

7-2. Color Shade Check

Compensate the color shade.

Mode	STILL (P AUTO) (**P**)
Subject	Clear chart (PTB-1450) (Standard picture frame) About 6cm from the front of the lens
Adjustment Page	6F
Adjustment Address	06, 07

Note1: Check that there are no reflections on the clear chart.

Switch setting:

ZOOM ..... WIDE end

Adjusting method:

1) Check that "1. Data Setting during Camera System Adjustments" is performed.
2) Start the F828 C1 MATRIX ADJ on the PC.
3) Click [Connect] on the F828 C1 MATRIX Adjustment screen. If the connection is normal, the F828 C1 MATRIX Adjustment screen will be as shown in bellow, indicating the "connected" state
4) Check that the picture frame is the standard picture frame.
5) Click [Color Shading Adjustment] on the F828 C1 MATRIX Adjustment screen.

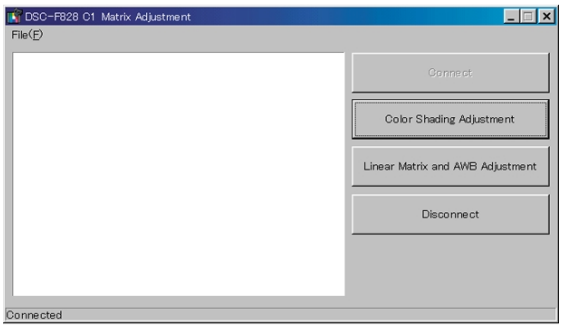

Fig. 6-1-16.

6) Color shading adjustment is performed automatically.

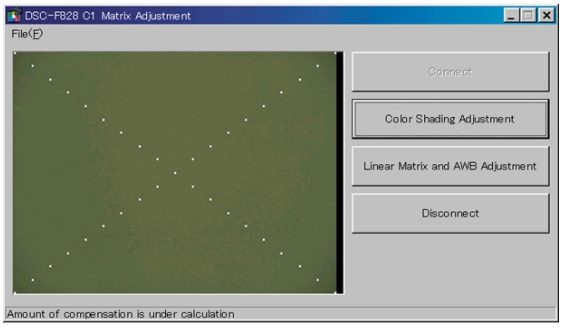

Fig. 6-1-17.

7) When the "Completion of adjustment" message is displayed. Click the [OK] button.

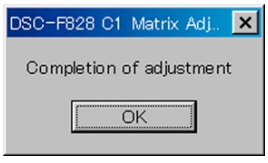

Fig. 6-1-18.

8) If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

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8. F No. Compensation

Adjusted the dispersion of the iris to every to every F number, and compensate the exposure.

Mode	STILL (P AUTO) (**P**)
Subject	Clear chart (PTB-1450/PTB-450) (Standard picture frame)
Measurement Point	Data of page: 6F, address: 6B
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	60 to 64, 6B to 6D
Specified value	00

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and set data: 00.

Switch setting:

ZOOM ..... WIDE end

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. or 6. Picture Frame Setting".
3	60	01	BB	Set the data.
4				Wait for 15 sec.
5	60	02		Read the data, and check it is "01". (Note2)
6	6F	6B		Read the data, and check it satisfies the specified value.

Note2: The adjustment data will be automatically input to page: 6F, address: 60 to 64, 6B to 6D.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Set the data.
2				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

9. Mechanical Shutter Adjustment

Adjust the dispersion of the opening/closing time and the closing loss rate of the mechanical shutter. and compensate the exposure.

Mode	STILL (P AUTO) (**P**)
Subject	Clear chart (PTB-1450/PTB-450) (Standard picture frame)
Measurement Point	Data of page: 6F, address: 6B
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	6B to 6D, B8 to D7
Specified value	00

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and set data: 00.

Switch setting:

ZOOM ..... WIDE end

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. or 6. Picture Frame Setting".
3	60	01	AD	Set the data.
4				Wait until the movement of the shutter stops.
5	60	02		Read the data, and check it is "01". (Note2)
6	6F	6B		Read the data, and check it satisfies the specified value.

Note2: The adjustment data will be automatically input to page: 6F, address: 6B to 6D, B8 to D7.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Set the data.
2				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

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10. Light Value Adjustment

Adjust the standard LV value.

Mode	STILL (P AUTO) (**P**)
Subject	Clear chart (PTB-1450/PTB-450) (Standard picture frame)
Measurement Point	Data of page: 10, address: 0C, 0D
Measuring Instrument	Data of page: 6F, address: 65
Adjustment Page	6F
Adjustment Address	65 to 67
Specified value1	0FE0 to 1020
Specified value2	40 to 60

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and set data: 00.

Switch setting:

ZOOM ..... WIDE end

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. or 6. Picture Frame Setting".
3	60	01	0D	Set the data.
4				Wait for 2 sec.
5	60	02		Read the data, and check it is "01". (Note2)
6	10	0C		Read the data, and this data is named D_{0C}.
7	10	0D		Read the data, and this data is named D_{0D}.
8				Calculate D_{LV} using the following equation (Hexadecimal calculation) $D_{LV} = D_{0C} \times 100 + D_{0D}$
10				Check that D_{LV} satisfies the specified value1.
11	6F	65		Read the data, and check it satisfies the specified value2.

Note2: The adjustment data will be automatically input to page: 6F, address: 65 to 67.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Set the data.
2				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

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11. Linear Matrix and AWB Adjustment

11-1. Preparation (Get Reference Data)

In this work, acquire a reference data for the liner matrix adjustment using a DSC-F828 camera that operates normally. And saves the data in the inside of the PC. Therefore, **if the same pattern box and the same 9 colors chart are used, it is not necessary to perform "Get Reference Data" again.** The reference data (GodRawData.CSV) is saved in the ProgramFiles\Sony\F828C1MATRIX holder of the C drive.

Mode	STILL (P AUTO) (**P**)
Subject	9 colors chart (PTB-1450) (Standard picture frame) About 6cm from the front of the lens

Note1: When the reference data is acquired using a non-adjusted camera. The linear matrix adjustment cannot be performed correctly.

Switch setting:

ZOOM ..... WIDE end
MACRO ..... ON
FOCUS ..... MANUAL

Adjusting method:

1) Prepare a DSC-F828 camera that operates normally, and this camera is named a reference camera.
2) Remove the camera under adjustment and installed the reference camera instead.
3) Set up the switches of the reference camera as above-mentioned.
4) Shoot the 9 colors chart with the standard picture frame. (Refer to "6. Picture Frame Setting (PTB-1450)".
5) Adjust the focus..
6) Start the F828 C1 MATRIX ADJ on the PC.
7) Click [Connect] on the F828 C1 MATRIX Adjustment screen.
8) Click [Get Reference Data] of the file menu of the F828 C1 MATRIX Adjustment screen.

Note2: When the "File over write" message is displayed, a reference data file (GodRawData.CSV) exists already in the Program Files\Sony\F828C1MATRIX holder of the C drive. If you want to save this file, rename it or move it to other holder.

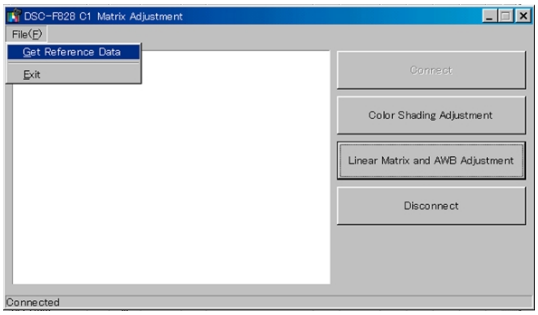

Fig. 6-1-19.

9) Acquisition of the reference data is performed automatically.

Note3: When the "Framing check" message is displayed, correct the picture frame, and repeat from step 8).

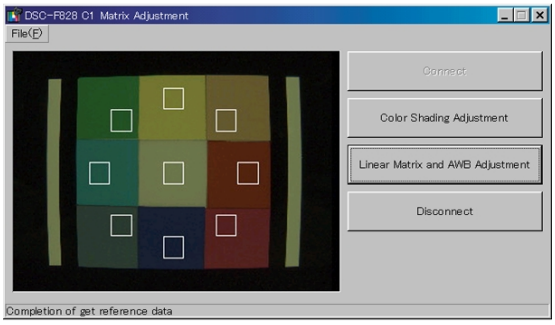

Fig. 6-1-20.

10) When the "Completion of get reference data" message is displayed. Click the [OK] button.

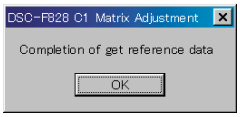

Fig. 6-1-21.

11) Remove the reference camera and installed the camera under adjustment instead.

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11-2. Linear Matrix and AWB Adjustment

This adjustment does the following adjustment items automatically.

Linear matrix adjustment
Compensate the dispersion of the linear matrix vale of the CCD imager.
AWB 3200K/5800K (Mon) standard data input
Acquire the white balance standard data at 3200K and 5800K in monitoring mode.
AWB 3200K/5800K (Cap) standard data input
Acquire the white balance standard data at 3200K and 5800K in capture mode.

Mode	STILL (P AUTO) (**P**)
Subject	9 colors chart (PTB-1450) (Standard picture frame) About 6cm from the front of the lens
Adjustment Page	6E
Adjustment Address	80 to 9F (Linear matrix adjustment) 04 to 21, 24 to 49 (AWB 3200K/5800K standard data input)

Switch setting:

ZOOM ..... WIDE end

Adjusting method:

1) Install the camera for adjustment.
2) Check that "1. Data Setting during Camera System Adjustments" is performed.
3) Set up the switches of the reference camera as above-mentioned.
4) Shoot the 9 colors chart with the standard picture frame. (Refer to "6. Picture Frame Setting (PTB-1450)".
5) Adjust the focus..
6) Start the F828 C1 MATRIX ADJ on the PC.
7) Click [Connect] on the F828 C1 MATRIX Adjustment screen.
8) Click [Linear Matrix and AWB Adjustment] on the F828 C1 MATRIX Adjustment screen.

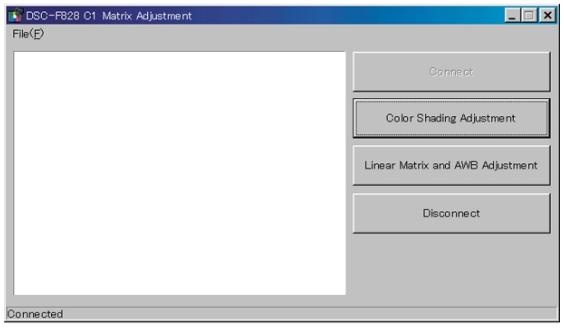

Fig. 6-1-22.

9) The following adjustments are performed automatically.
Linear matrix adjustment
AWB 3200K/5800K (Mon) standard data input
AWB 3200K/5800K (Cap) standard data input

Note: When the "Framing check" message is displayed, correct the picture frame, and repeat from step 7).

When the "File C:\ProgramFiles\Sony\F828C1MATRIX\GodRawData.CSV can not be open" message is displayed, the reference data file (GodRawData.CSV) for the liner matrix adjustment is not in the inside of the PC. Therefore, perform "11-1. Preparation (Get Reference Data)".

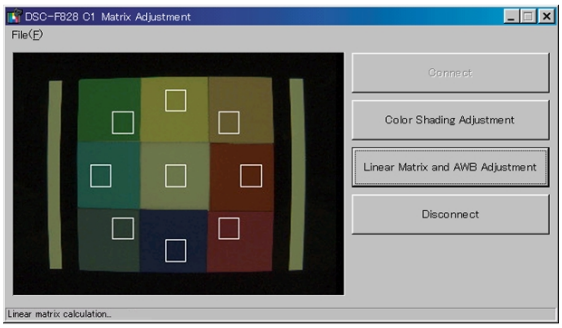

Fig. 6-1-23.

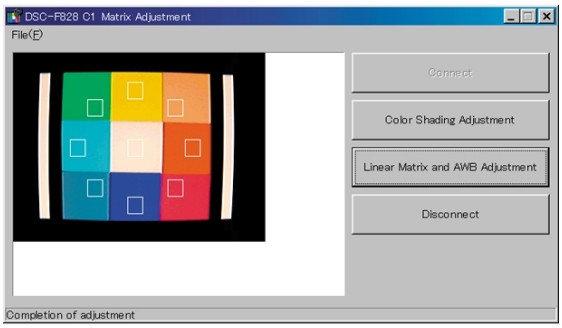

Fig. 6-1-24.

10) When the "Completion of adjustment" message is displayed. Click the [OK] button.

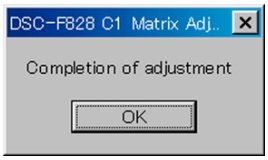

Fig. 6-1-25.

11) If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

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12. Color Reproduction Check (CAP-Normal mode)

Adjust the color reproduction of yellow, red, blue and cyan so that proper color reproduction is produced.

Mode	STILL (P AUTO) (**P**)
Subject	9 colors chart (PTB-1450) Color bar chart (PTB-450) (Standard picture frame)
Measurement Point	Video terminal of A/V OUT jack
Measuring Instrument	NTSC vectorscope
Specified Value	Each center of six color luminance points should settle within each color reproduction frame.

Note: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and set data: 00.

Switch setting:

ZOOM ..... WIDE end
VIDEO OUT (SET UP setting) ..... NTSC

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. or 6. Picture Frame Setting".
3	7A	18		Read the data, and memorize it.
4	7A	18	00	Set the data.
5	60	37	39	Set the data.
6	60	01	AB	Set the data.
7				Wait for 1 sec.
8				Adjust the GAIN and PHASE of the vectorscope so that the burst luminance point is set at the specified position.
9				Check that each center of six color luminance points is set in each color reproduction frame.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Set the data.
2	7A	18		Set the data memorized at "Adjusting method".
3				Wait for 1 sec.
4	60	37		Read the data, and check it is "00".
5				Perform "Color Reproduction Check". If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

For CAP-Normal mode

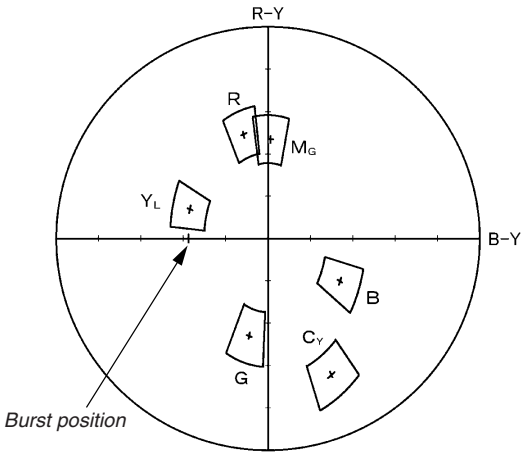

Fig. 6-1-26.

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13. Color Reproduction Check (CAP-Real mode)

Adjust the color reproduction of yellow, red, blue and cyan so that proper color reproduction is produced.

Mode	STILL (P AUTO) (**P**)
Subject	9 colors chart (PTB-1450) Color bar chart (PTB-450) (Standard picture frame)
Measurement Point	Video terminal of A/V OUT jack
Measuring Instrument	NTSC vectorscope
Specified Value	Each center of six color luminance points should settle within each color reproduction frame.

Note: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and set data: 00.

Switch setting:

ZOOM ..... WIDE end
VIDEO OUT (SET UP setting) ..... NTSC

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. or 6. Picture Frame Setting".
3	60	57	01	Set the data.
4	7A	24		Read the data, and memorize it.
5	7A	24	00	Set the data.
6	60	37	39	Set the data.
7	60	01	AB	Set the data.
8				Wait for 1 sec.
9				Adjust the GAIN and PHASE of the vectorscope so that the burst luminance point is set at the specified position.
10				Check that each center of six color luminance points is set in each color reproduction frame.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Set the data.
2	7A	24		Set the data memorized at "Adjusting method".
3	60	57	00	Set the data.
4				Wait for 1 sec.
5	60	37		Read the data, and check it is "00".
6				Perform the next adjustment. If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

For CAP-Real mode

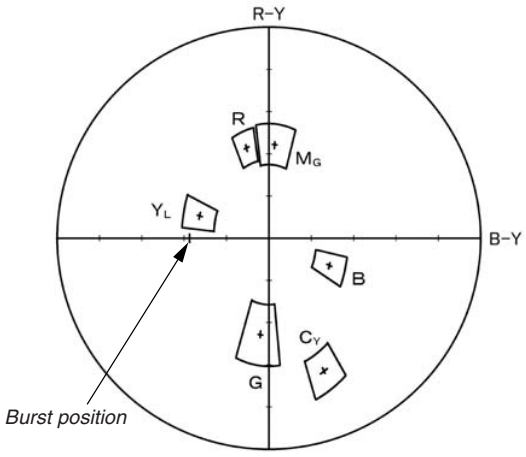

Fig. 6-1-27.

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14. CCD Linearity Check

Data picking is done to keep output linearity of the CCD imager, even if the input level of CCD imager changes.

Mode	STILL(P AUTO) (**P**)
Subject	Clear chart (PTB-1450/PTB-450) (Standard picture frame)
Measurement Point	Data of page: 10, address: 80, 81, 82, 83
Measuring Instrument	
Specified value1	97 to 103 (Note1)
Specified value2	94 to 106 (Note1)
Specified value3	92 to 108 (Note1)
Specified value4	97 to 104 (Note1)
Specified value5	94 to 109 (Note1)
Specified value6	92 to 112 (Note1)

Note1: Decimal number.
Note2: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and set data: 00.
Note3: For the bit values, refer to "6-2. SERVICE MODE", "2-2. 2. Bit value discrimination".

Switch setting:

ZOOM ..... WIDE end

Preparation:

Order	Page	Address	Data	Procedure
1				Install the clear chart.
2				Check that "1. Data Setting during Camera System Adjustments" is performed.
3				Check the picture frame. If deviated, perform "5. or 6. Picture Frame Setting".
4	75	09		Read the data, and memorize it.
5	75	09	04	Set the data.
6	77	F6		Read the data, and memorize it.
7	77	F6		Set Bit2 of the data to "0". (Note3)
8	77	F7		Read the data, and memorize it.
9	77	F7		Set Bit6 of the data to "1". (Note3)
10	77	F2		Read the data, and memorize it.
11	77	F2		Set Bit6 of the data to "0". (Note3)
12	77	F2		Set Bit0 of the data to "0". (Note3)
13	77	72		Read the data, and memorize it.
14	60	14	90	Set the data.
15	60	12	9F	Set the data.
16	75	17		Read the data, and memorize it.
17	75	17	AA	Set the data.
18	75	18		Read the data, and memorize it.
19	75	18	00	Set the data.
20	75	19		Read the data, and memorize it.
21	75	19	E8	Set the data.
22	75	1A		Read the data, and memorize it.
23	75	1A	54	Set the data.
24	75	1B		Read the data, and memorize it.
25	75	1B	74	Set the data.
26				Wait for 2 sec.

Checking method:

Order	Page	Address	Data	Procedure
1				Perform "Preparation" before this adjustment.
2	60	01	F9	Set the data.
3				Wait for 2 sec.
4	60	E1		Read the data, and check it is "08".
5	10	80		Read the data, and this data is named D_{80}.
6	10	81		Read the data, and this data is named D_{81}.
7				Calculate D_{RG0} using the following equation (Hexadecimal calculation) $D_{RG0} = D_{80} \times 100 + D_{81}$
8	10	82		Read the data, and this data is named D_{82}.
9	10	83		Read the data, and this data is named D_{83}.
10				Calculate D_{BG0} using the following equation (Hexadecimal calculation) $D_{BG0} = D_{82} \times 100 + D_{83}$
11	60	01	00	Set the data.
12	60	E1	00	Set the data.
13	77	72	48	Set the data.
14				Wait for 2 sec.
15	60	01	F9	Set the data.
16				Wait for 2 sec.
17	60	E1		Read the data, and check it is "08".
18	10	80		Read the data, and this data is named D_{80}.
19	10	81		Read the data, and this data is named D_{81}.
20				Calculate D_{RG1} using the following equation (Hexadecimal calculation) $D_{RG1} = D_{80} \times 100 + D_{81}$
21	10	82		Read the data, and this data is named D_{82}.
22	10	83		Read the data, and this data is named D_{83}.
23				Calculate D_{BG1} using the following equation (Hexadecimal calculation) $D_{BG1} = D_{82} \times 100 + D_{83}$
24	60	01	00	Set the data.
25	60	E1	00	Set the data.
26	77	72	0C	Set the data.
27				Wait for 2 sec.
28	60	01	F9	Set the data.
29				Wait for 2 sec.
30	60	E1		Read the data, and check it is "08".
31	10	80		Read the data, and this data is named D_{80}.
32	10	81		Read the data, and this data is named D_{81}.

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Order	Page	Address	Data	Procedure
33				Calculate D_{RG2} using the following equation (Hexadecimal calculation) $D_{RG2} = D_{80} \times 100 + D_{81}$
34	10	82		Read the data, and this data is named D_{82}.
35	10	83		Read the data, and this data is named D_{83}.
36				Calculate D_{BG2} using the following equation (Hexadecimal calculation) $D_{BG2} = D_{82} \times 100 + D_{83}$
37	60	01	00	Set the data.
38	60	E1	00	Set the data.
39	60	12	A2	Set the data.
40	77	72	06	Set the data.
41				Wait for 2 sec.
42	60	01	F9	Set the data.
43				Wait for 2 sec.
44	60	E1		Read the data, and check it is “08”.
45	10	80		Read the data, and this data is named D_{80}.
46	10	81		Read the data, and this data is named D_{81}.
47				Calculate D_{RG3} using the following equation (Hexadecimal calculation) $D_{RG3} = D_{80} \times 100 + D_{81}$
48	10	82		Read the data, and this data is named D_{82}.
49	10	83		Read the data, and this data is named D_{83}.
50				Calculate D_{BG3} using the following equation (Hexadecimal calculation) $D_{BG3} = D_{82} \times 100 + D_{83}$
51				Convert D_{RG0}, D_{BG0}, D_{RG1}, D_{BG1}, D_{RG2}, D_{BG2}, D_{RG3} and D_{BG3} to decimal number, and obtain D_{RG0}', D_{BG0}', D_{RG1}', D_{BG1}', D_{RG2}', D_{BG2}', D_{RG3}' and D_{BG3}'.
52				Calculate R/G ratio (1), B/G ratio (1), R/G ratio (2), B/G ratio (2), R/G ratio (3) and B/G ratio (3), using the following equations (Decimal calculation) $R/G\ ratio\ (1) = (D_{RG1}'/D_{RG0}') \times 100$ $B/G\ ratio\ (1) = (D_{BG1}'/D_{BG0}') \times 100$ $R/G\ ratio\ (2) = (D_{RG2}'/D_{RG0}') \times 100$ $B/G\ ratio\ (2) = (D_{BG2}'/D_{BG0}') \times 100$ $R/G\ ratio\ (3) = (D_{RG3}'/D_{RG0}') \times 100$ $B/G\ ratio\ (3) = (D_{BG3}'/D_{BG0}') \times 100$
				Linearity check of high luminance
53				Check that R/G ratio (1) satisfies the specified value 1. (Decimal number)
54				Check that B/G ratio (1) satisfies the specified value 4. (Decimal number)
				Linearity check of low luminance
55				Check that R/G ratio (2) satisfies the specified value 2. (Decimal number)
56				Check that B/G ratio (2) satisfies the specified value 5. (Decimal number)
				Linearity check of very low luminance
57				Check that R/G ratio (3) satisfies the specified value 3. (Decimal number)
58				Check that B/G ratio (3) satisfies the specified value 6. (Decimal number)

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Set the data.
2	60	E1	00	Set the data.
3	60	12	00	Set the data.
4	60	14	00	Set the data.
5	75	09		Set the data memorized at “Preparation”.
6	77	F6		Set the data memorized at “Preparation”.
7	77	F7		Set the data memorized at “Preparation”.
8	77	F2		Set the data memorized at “Preparation”.
9	77	72		Set the data memorized at “Preparation”.
10	75	17		Set the data memorized at “Preparation”.
11	75	18		Set the data memorized at “Preparation”.
12	75	19		Set the data memorized at “Preparation”.
13	75	1A		Set the data memorized at “Preparation”.
14	75	1B		Set the data memorized at “Preparation”.
15				Save the data.
16				Wait for 2 sec.
17				Perform next adjustments. If finish the camera system adjustments, release the data setting. (See “1. Data Setting during Camera System Adjustments”.)

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15. CCD White Defect Compensation Check

The positions of the white defective pixel are detected, and check that the pixels can be corrected.

Mode	STILL (P AUTO) (**P**)
Subject	Clear chart (PTB-1450/PTB-450) (Standard picture frame)
Measurement Point	Data of page: 60, address: 55
Measuring Instrument	
Specified value 1	00 to 40
Specified value 2	00

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and set data: 00.

Note2: The white defective pixels are influenced by temperature. Therefore, perform adjustment after the power is turned on, and sufficient time passes, and the camera gets warm.

Switch setting:

ZOOM ..... WIDE end

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. or 6. Picture Frame Setting".
3	7D	64		Read the data, and memorize the data.
4	7D	64	1E	Set the data.
5	7D	69		Read the data, and memorize the data.
6	7D	69	28	Set the data.
7	60	01	8B	Set the data.
8				Wait for about 20 sec.
9	60	02		Read the data, and check it is "01".
10	60	55		Read the data, and check it satisfies the specified value 1.
11	60	01	00	Set the data.
12				Wait for 1 sec.
13	7D	64	0F	Set the data.
14	7D	69	C0	Set the data.
15	60	01	87	Set the data.
16				Wait for about 20 sec.
17	60	02		Read the data, and check it is "01".
18	60	55		Read the data, and check it satisfies the specified value 2.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Set the data.
2				Wait for 1 sec.
3	7D	64		Set the data memorized at "Adjusting method".
4	7D	69		Set the data memorized at "Adjusting method".
5				Save the data.
6				Wait for 2 sec.
7				Perform next adjustments. If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

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16. CCD Black Defect Compensation Check

The positions of the black defective pixel are detected, and check that the pixels can be corrected. And confirms that there is no trash in the surface of the CCD imager, the optical filter and the inside of the lens.

Mode	STILL (P AUTO) (**P**)
Subject	Clear chart (PTB-1450/PTB-450) (Standard picture frame)
Measurement Point	Data of page: 60, address: 55
Measuring Instrument	
Specified value 1	00 to 30
Specified value 2	00

Note1: Check that there are no dust, no dirt and no reflection on the clear chart.

Note2: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and Set data: 00.

Switch setting:

ZOOM ..... 70 (mm)

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. or 6. Picture Frame Setting".
3	7D	65		Read the data, and memorize it.
4	7D	65	0A	Set the data.
5	60	2C	01	Set the data.
6				Rotate ZOOM ring and set the ZOOM to "70" position.
7	60	92	00	Set the data.
8	60	93	00	Set the data.
9	60	01	79	Set the data.
10	60	30	08	Set the data.
11				Wait for 1 sec.
12	60	07		Read the data, and check it is "01".
13				Check that the whole of the screen is white.
14	60	01	8D	Set the data.
15				Wait for about 35 sec.
16	60	02		Read the data, and check it is "01".
17	60	55		Read the data, and check it satisfies the specified value 1. If the data is "00", proceed to "Processing after Completing Adjustments"
18	60	01	00	Set the data.
19				Wait for 1 sec.
20	7D	65	0E	Set the data.
21	60	01	89	Set the data.
22				Wait for about 35 sec.
23	60	02		Read the data, and check it is "01".
24	60	55		Read the data, and check it satisfies the specified value 2.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Set the data.
2				Wait for 1 sec.
3	60	2C	00	Set the data.
4	60	30	00	Set the data.
5	7D	65		Set the data memorized at "Adjusting method".
6				Save the data.
7				Wait for 2sec.
8				Set the ZOOM to WIDE end.
9				Perform next adjustments. If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

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17. Strobe Adjustment

Adjust the light level and white balance when the strobe light flashes.

Mode	STILL (P AUTO) (**P**)	
Subject	Background paper (J-2501-130-A) (50cm from the front of the lens)	
Measurement Point	Data of page 6F, address: DC	
Measuring Instrument	Data of page 6E, address: 4F	
Adjustment Page	6F	6E
Adjustment Address	D8 to EF	72 to 75
Specified Value1	03 to 09	
Specified Value2	00	

Note1: Perform this adjustment in the dark room or use the flash adjustment box.
Note2: Any light other than the strobe light should not light up the plate.
Note3: After the power is turned on, this adjustment can be done only once.
Note4: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and set data: 00.

Switch setting:

ZOOM ..... WIDE end
FLASH ..... OPEN

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2	60	2C	01	Set the data.
3	60	92	FF	Set the data.
4	60	93	FF	Set the data.
5	60	6C	01	Set the data.
6	60	01	79	Set the data.
7				Wait for 5 sec.
8	60	07		Read the data, and check it is "01".
9	6E	4F	FF	Set the data.
10	60	01	B9	Set the data.
11				Check the flashing.
12	60	02		Read the data, and check it is "01". (Note5)
13	6F	D8		Read the data, and check it is "00".
14	60	01	00	Set the data.
15				Wait for 5 sec.
16	60	ED		Read the data, and check it is "02".
17				Wait for 1 sec.
18	60	01	E7	Set the data.
19				Check the flashing.
20	60	02		Read the data, and check it is "01".
21	6F	D8		Read the data, and check it is "00".
22	6F	DC		Read the data, and check it satisfies the specified value 1.
23	6E	4F		Read the data, and check it satisfies the specified value 2.

Note5: The adjustment data will be automatically input to page: 6F, address: D8 to EF, and to page: 6E, address: 72 to 75.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Set the data.
2	60	2C	00	Set the data.
3	60	6C	00	Set the data.
4	60	92	00	Set the data.
5	60	93	00	Set the data.
6				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

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18. AF Laser Output Adjustment

Adjust the AF laser output power.

Mode	STILL (P AUTO) (**P**)
Subject	Background paper (J-2501-130-A). (50cm from the front of the lens)
Measurement Point	Data of page 6F, address: 13
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	10 to 16
Specified Value	00

Note1: Perform this adjustment in the dark room or use the flash adjustment box.

Note2: Any light other than the strobe light should not light up the plate.

Switch setting:

ZOOM ..... WIDE end

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2	6F	10	20	Set the data.
3	6F	15	48	Set the data.
4	60	01	AF	Write the data.
5				Check that the AF laser is lit.
6				Wait for 8 sec.
7	60	02		Read the data, and check it is "01". (Note3)
8	6F	13		Read the data, and check it satisfies the specified value 1.

Note3: The adjustment data will be automatically input to page: 6F, address: 10 to 16.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

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19. AF Laser Axis Check

Check the AF laser optical axis.

Mode	STILL(P AUTO) (**P**)
Subject	Background paper (J-2501-130-A) (1m from the front of the lens)
Measurement Point	Monitor TV (under scan)
Measuring Instrument	
Specified Value	All hologram patterns are within the inspection frame.

Note1: Perform this adjustment in the dark room.

Preparations:

1) Take a copy of the AF Laser axis frame with a clear sheet. (Reduce or enlarge the frame in same size as the effective picture frame of the monitor TV.)

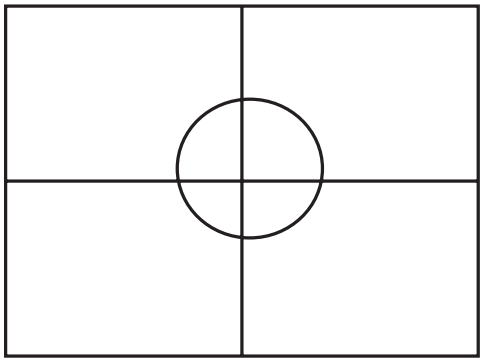

Fig. 6-1-28.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that “1. Data Setting during Camera System Adjustments” is performed.
2	60	30	06	Set the data.
3	60	2C	01	Set the data.
4				Set the ZOOM to WIDE end.
5	60	92	05	Set the data.
6	60	93	70	Set the data.
7	60	01	79	Write the data.
8				Wait for 3 sec.
9	60	07		Read the data, and check it is “01”.
10	60	01	00	Write the data.
11	60	22	05	Set the data.
12	60	23	0A	Set the data.
13				Check that all hologram patterns are within the inspection frame. (Fig. 6-1-15.)
14				Set the ZOOM to TELE end.
15	60	92	05	Set the data.
16	60	93	70	Set the data.
17	60	01	79	Write the data.
18				Wait for 3 sec.
19	60	07		Read the data, and check it is “01”.
20	60	58	01	Set the data.
21	60	14	8A	Set the data.
22	60	01	00	Write the data.
23				Check that all hologram patterns are not unfocused.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	14	00	Set the data.
2	60	22	00	Set the data.
3	60	23	00	Set the data.
4	60	2C	00	Set the data.
5	60	30	00	Set the data.
6	60	58	00	Set the data.
7	60	92	00	Set the data.
8	60	93	00	Set the data.
9				If finish the camera system adjustments, release the data setting. (See “1. Data Setting during Camera System Adjustments”.)

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1-5. COLOR ELECTRONIC VIEWFINDER ADJUSTMENT

Note1: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Note2: If you perform the adjustments with FINDER/LCD switch (Control switch block (UNDER)) removed, set the following data.
1) Select page: 80, address: 10, and set data: 1A.
2) Select page: 80, address: 11, and set data: 01.
Reset the data after completing adjustment.
1) Select page: 80, address: 10, and set data: FF.
2) Select page: 80, address: 11, and set data: 00.

Switch setting:

FINDER/LCD ..... FINDER

1. Data Setting during EVF System Adjustments

Perform the following data setting before the EVF system adjustments.

Note: When the power is turned off, some data settings will be released. So perform this data setting again when the power is turned off.

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	80	70	01	Set the data.

After completing the EVF system adjustments, release the data setting.

Order	Page	Address	Data	Procedure
1	80	70	00	Set the data.
2				Save the data.
3				Wait for 2 sec.
4	00	01	00	Set the data.

2. EVF Initial Data Input

Mode	PLAY (▶)
Signal	Arbitrary
Adjustment Page	8F
Adjustment Address	70, 71, 73 to 78, 7A, 7C

Adjusting method:

1) Select page: 00, address: 01, and set data: 01.
2) Select page: 8F, and set the data in the following table.
3) Save the data.
4) Wait for 2sec.
5) Select page: 00, address: 01, and set data: 00.

Address	Data	Remark
70	53	Fixed data
71	96	Fixed data
73	80	VCO adj.
74	A4	V COM adj.
75	8D	Bright adj.
76	40	Fixed data
77	00	Fixed data
78	90	White balance adj.
7A	80	White balance adj.
7C	38	Contrast adj.

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3. VCO Adjustment (SY-096 board)

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	PLAY (▶)
Subject	Arbitrary
Measurement Point	Data of page: 80, address: 02
Measuring Instrument	
Adjustment Page	8F
Adjustment Address	73
Specified Value	01

Note1: A memory stick must be inserted.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during EVF System Adjustments" is performed.
2	8F	84	2F	Set the data.
3	80	00	00	Set the data.
4	80	02	00	Set the data.
5	80	01	80	Set the data.
6	80	00	01	Set the data.
7				Wait for 1 sec.
8	80	02		Read the data, and check it is "01". (Note2)
9				Wait for 1 sec.
10				If finish the EVF system adjustments, release the data setting. (See "1. Data Setting during EVF System Adjustments".)

Note2: If the data is other than "01", adjustment has errors. See the following table.

Data of page: 80, address: 02	Contents of adjustment error
01	Normally finished
10	Reached an upper limit
20	Reached a lower limit
30	Time out
40	Out of adjustment range
50	Adjustment is impossible

4. Bright Adjustment (SY-096 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	PLAY (▶)
Subject	Arbitrary
Measurement Point	Data of page: 80, address: 02
Measuring Instrument	
Adjustment Page	8F
Adjustment Address	75
Specified Value	01

Note1: A memory stick must be inserted.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during EVF System Adjustments" is performed.
2	8F	88	9F	Set the data.
3	80	00	00	Set the data.
4	80	02	00	Set the data.
5	80	01	80	Set the data.
6	80	00	03	Set the data.
7				Wait for 1 sec.
8	80	02		Read the data, and check it is "01". (Note2)
9				Wait for 1 sec.
10				If finish the EVF system adjustments, release the data setting. (See "1. Data Setting during EVF System Adjustments".)

Note2: If the data is other than "01", adjustment has errors. See the following table.

Data of page: 80, address: 02	Contents of adjustment error
01	Normally finished
10	Reached an upper limit
20	Reached a lower limit
30	Time out
40	Out of adjustment range
50	Adjustment is impossible

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5. Contrast Adjustment (SY-096 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	PLAY (▶)
Subject	Arbitrary
Measurement Point	Data of page: 80, address: 02
Measuring Instrument	
Adjustment Page	8F
Adjustment Address	7C
Specified Value	01

Note1: A memory stick must be inserted.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during EVF System Adjustments" is performed.
2	8F	89	44	Set the data.
3	80	00	00	Set the data.
4	80	02	00	Set the data.
5	80	01	80	Set the data.
6	80	00	05	Set the data.
7				Wait for 1 sec.
8	80	02		Read the data, and check it is "01". (Note2)
9				Wait for 1 sec.
10				If finish the EVF system adjustments, release the data setting. (See "1. Data Setting during EVF System Adjustments".)

Note2: If the data is other than "01", adjustment has errors. See the following table.

Data of page: 80, address: 02	Contents of adjustment error
01	Normally finished
10	Reached an upper limit
20	Reached a lower limit
30	Time out
40	Out of adjustment range
50	Adjustment is impossible

6. V COM Adjustment (SY-096 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will move, producing flicker and conspicuous vertical lines.

Mode	PLAY (▶)
Subject	Arbitrary
Measurement Point	Data of page: 80, address: 02
Measuring Instrument	
Adjustment Page	8F
Adjustment Address	74
Specified Value	01

Note1: A memory stick must be inserted.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during EVF System Adjustments" is performed.
2	8F	8C	03	Set the data.
3	80	00	00	Set the data.
4	80	02	00	Set the data.
5	80	01	80	Set the data.
6	80	00	07	Set the data.
7				Wait for 1 sec.
8	80	02		Read the data, and check it is "01". (Note2)
9				Wait for 1 sec.
10				If finish the EVF system adjustments, release the data setting. (See "1. Data Setting during EVF System Adjustments".)

Note2: If the data is other than "01", adjustment has errors. See the following table.

Data of page: 80, address: 02	Contents of adjustment error
01	Normally finished
10	Reached an upper limit
20	Reached a lower limit
30	Time out
40	Out of adjustment range
50	Adjustment is impossible

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7. White Balance Adjustment (SY-096 board)

Correct the white balance.
If deviated, the LCD screen color cannot be reproduced.

Mode	PLAY (▶)
Subject	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	8F
Adjustment Address	78, 7A
Specified Value	The EVF screen should not be colored.

Note1: Use the AC power adaptor during this adjustment.
Note2: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC902

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that “1. Data Setting during EVF System Adjustments” is performed.
2	80	71	52	Set the data.
3	80	89	02	Set the data.
4	8F	78	90	Set the data.
5	8F	7A	80	Set the data.
6	8F	78		Check that the LCD screen is not colored. If not colored, proceed to step 10.
7	8F	78		Change the data so that the LCD screen is not colored.
8	8F	7A		Change the data so that the LCD screen is not colored.
9	8F	7A		If the LCD screen is colored, repeat steps 7 to 9.
10	80	71	FF	Set the data.
11				Save the data.
12				Wait for 2 sec.
13				If finish the EVF system adjustments, release the data setting. (See “1. Data Setting during EVF System Adjustments”.)

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1-6. LCD SYSTEM ADJUSTMENT

Note1: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Note2: If you perform the adjustments with FINDER/LCD switch (Control switch block (UNDER)) removed, set the following data.
1) Select page: 80, address: 10, and set data: 1A.
2) Select page: 80, address: 11, and set data: 00.
Reset the data after completing adjustment.
1) Select page: 80, address: 10, and set data: FF.
2) Select page: 80, address: 11, and set data: 00.

Switch setting:

FINDER/LCD ..... LCD

1. Data Setting during LCD System Adjustments

Perform the following data setting before the LCD system adjustments.

Note1: When the power is turned off, some data settings will be released. So perform this data setting again when the power is turned off.

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	80	70	01	Set the data.

After completing the LCD system adjustments, release the data setting.

Order	Page	Address	Data	Procedure
1	80	70	00	Set the data.
2				Save the data.
3				Wait for 2 sec.
4	00	01	00	Set the data.

2. LCD Initial Data Input

Mode	PLAY (▶)
Signal	Arbitrary
Adjustment Page	8F
Adjustment Address	20, 21, 23 to 28, 2A, 2C

Adjusting method:

1) Select page: 00, address: 01, and set data: 01.
2) Select page: 8F, and write the data in the following table.
3) Save the data.
4) Wait for 2sec.
5) Select page: 00, address: 01, and set data: 00.

Address	Data	Remark
20	A5	Fixed data
21	19	Fixed data
23	80	VCO adj.
24	76	VCOM adj.
25	84	Fixed data
26	00	Fixed data
27	63	Fixed data
28	90	White balance adj.
2A	80	White balance adj.
2C	72	Contrast adj.

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3. VCO Adjustment (SY-096 board)

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	PLAY (▶)
Subject	Arbitrary
Measurement Point	Data of page: 80, address: 02
Measuring Instrument	
Adjustment Page	8F
Adjustment Address	23
Specified Value	01

Note1: A memory stick must be inserted.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that “1. Data Setting during LCD System Adjustments” is performed.
2	8F	34	1D	Set the data.
3	80	00	00	Set the data.
4	80	02	00	Set the data.
5	80	01	00	Set the data.
6	80	00	01	Set the data.
7				Wait for 1 sec.
8	80	02		Read the data, and check it is “01”. (Note2)
9				Wait for 1 sec.
10				If finish the LCD system adjustments, release the data setting. (See “1. Data Setting during LCD System Adjustments”.)

Note2: If the data is other than “01”, adjustment has errors. See the following table.

Data of page: 80, address: 02	Contents of adjustment error
01	Normally finished
10	Reached an upper limit
20	Reached a lower limit
30	Time out
40	Out of adjustment range
50	Adjustment is impossible

4. Contrast Adjustment (SY-096 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	PLAY (▶)
Subject	Arbitrary
Measurement Point	Data of page: 80, address: 02
Measuring Instrument	
Adjustment Page	8F
Adjustment Address	2C
Specified Value	01

Note1: A memory stick must be inserted.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that “1. Data Setting during LCD System Adjustments” is performed.
2	8F	39	80	Set the data.
3	80	00	00	Set the data.
4	80	02	00	Set the data.
5	80	01	01	Set the data.
6	80	00	05	Set the data.
7				Wait for 1 sec.
8	80	02		Read the data, and check it is “01”. (Note2)
9				Wait for 1 sec.
10				If finish the LCD system adjustments, release the data setting. (See “1. Data Setting during LCD System Adjustments”.)

Note2: If the data is other than “01”, adjustment has errors. See the following table.

Data of page: 80, address: 02	Contents of adjustment error
01	Normally finished
10	Reached an upper limit
20	Reached a lower limit
30	Time out
40	Out of adjustment range
50	Adjustment is impossible

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5. V COM Adjustment (SY-096 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will move, producing flicker and conspicuous vertical lines.

Mode	PLAY (▶)
Subject	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	8F
Adjustment Address	24
Specified Value	The brightness difference between the section A and section B is minimum.

Note: A memory stick must be inserted.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during LCD System Adjustments" is performed.
2	80	71	76	Set the data.
3	8F	41	23	Set the data.
4	8F	24		Change the data so that the brightness of the section A and that of the section B is equal.
5	80	71	FF	Set the data.
6	8F	41	21	Set the data.
7				Save the data.
8				Wait for 2 sec.
9				If finish the LCD system adjustments, release the data setting. (See "1. Data Setting during LCD System Adjustments".)

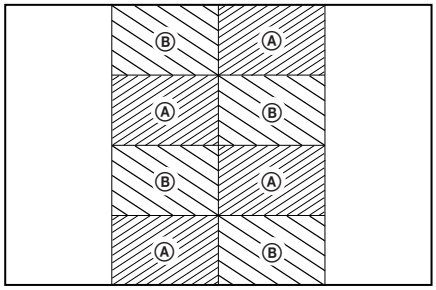

Fig. 6-1-16.

6. White Balance Adjustment (SY-096 board)

Correct the white balance.
If deviated, the LCD screen color cannot be reproduced.

Mode	PLAY (▶)
Subject	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	8F
Adjustment Address	28, 2A
Specified Value	The LCD screen should not be colored.

Note1: Use the AC power adaptor during this adjustment.
Note2: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC801

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during LCD System Adjustments" is performed.
2	80	71	52	Set the data.
3	80	84	02	Set the data.
4	8F	28	90	Set the data.
5	8F	2A	80	Set the data.
6	8F	28		Check that the LCD screen is not colored. If not colored, proceed to step 10.
7	8F	28		Change the data so that the LCD screen is not colored.
8	8F	2A		Change the data so that the LCD screen is not colored.
9	8F	2A		If the LCD screen is colored, repeat steps 7 to 9.
10	80	71	FF	Set the data.
11				Save the data.
12				Wait for 2 sec.
13				If finish the LCD system adjustments, release the data setting. (See "1. Data Setting during LCD System Adjustments".)

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6-2. SERVICE MODE

2-1. APPLICATION FOR ADJUSTMENT (SEUS)

The application for adjustment (SEUS) is used for changing the calculation coefficient in signal processing, EVR data, etc. The SEUS performs bi-directional communication between the personal computer (PC) and the unit using the USB signal. The resultant data of this bi-directional communication is written in the non-volatile memory.

2-1-1. Using Method of SEUS

Switch setting:

MS/CF ..... MS (Memory stick)

1. Connection

1) Connect the HASP key to the USB port of the PC.
2) Connect the camera to another USB port of the PC.
3) Insert a memory stick to the camera.
4) Confirm that the camera starts in the USB mode.
5) Start the SEUS on the PC.
6) Click [Connect] on the SEUS screen. If the connection is normal, the SEUS screen will be as shown in Fig. 6-2-1, indicating the "connected" state.

Note: The SEUS will go in "disconnect" state, if the camera is turned off (for instance, by resetting the unit). In such a case, click [Connect] on the SEUS screen to restore the "connected" state.

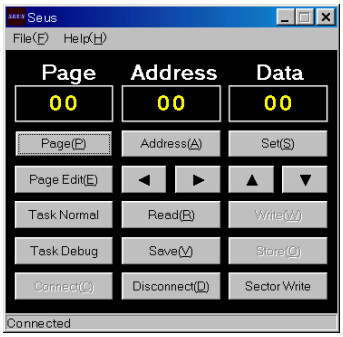

Fig. 6-2-1.

2. Operation

- **Page change**
  To change the page, click [Page] on the SEUS screen and enter the page to be changed. The page is displayed in hexadecimal notation.

- **Address change**
  To change the address, click [Address] on the SEUS screen and enter the address to be changed. Or click [▶] to increase the address, click [◀] to decrease the address. The address is displayed in hexadecimal notation.

- **Data change**
  To change the data, click [Set] on the SEUS screen and enter the data. Or click [▲] to increase the data, click [▼] to decrease the data. The data is displayed in hexadecimal notation.
  This operation does not write the data to the nonvolatile memory. If you want to write the changed data, click [Save] to write it.

- **Data saving**
  To write the all changed data to the nonvolatile memory, click [Save] on the SEUS screen. and wait for 2 sec.
  Note: Even if [Write] or [Store] on the SEUS screen is clicked, the data can not be write to the nonvolatile memory.

- **Data reading**
  The data displayed on the SEUS screen are the data values at the time when the pages and addresses were set, and they are not updated automatically. To check the data change, click [Read] on the SEUS screen and update the displayed data.

2-1-2. Precaution on Use of SEUS

Mishandling of the SEUS may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be saved before beginning adjustments.

1) Click [Page Edit] on the SEUS screen.
2) Click [Page], and enter the page number to be saved.
3) Click [Read] to read the data to be saved from the camera.
4) Click [File] and save the data to the PC.

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2-2. SERVICE MODE

1. Setting the Test Mode

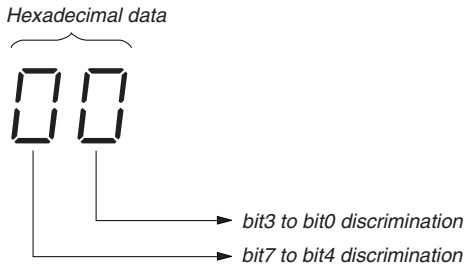
Page 2F	Address 23

Data	Function
80	Normal
11	Forced STILL mode power ON
12	Forced PLAY mode power ON
04	Forced MOVIE mode power ON

- Before setting the data, select page: 00, address: 01, and set data: 01.
- For page 2F, the data set is recorded in the non-volatile memory by saving data. In this case, take note that the test mode will not be exited even when the main power is turned off.
- After completing adjustments/repairs, release the data setting .
  1) Select page: 00, address: 01, and set data: 01.
  2) Select page: 2F, address: 23, and set data: 80.
  3) Save the data.
  4) Wait for 2 sec.
  5) Select page: 00, address: 01, and set data: 00.

2. Bit value discrimination

Bit values must be discriminated using the hexadecimal data for following items. Use the table below to discriminate if the bit value is “1” or “0”.



	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

Examples: If the hexadecimal data is “8E”, the bit values for bit7 to bit4 are shown in the Ⓐ column, and the bit values for bit3 to bit0 are shown in the Ⓑ column.

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3. Switch check (1)

Page 20	Address 80

Bit	Function	When bit value=1	When bit value=0
0	POWER switch (XPWER ON) (Control switch block (TOP))	OFF	ON

Using method:

1) Select page: 20, address: 80.
2) Read the data. By discriminating the bit value of the data, the state of the switch can be discriminated.

4. Switch check (2)

Page 20	Address 90 to 96

Using method:

1) Select page: 20, address: 90 to 96.
2) Read the data. By discriminating the data, the pressed key can be discriminated.

Address	Data						
	00 to 0B	0C to 26	27 to 47	48 to 72	73 to A4	A5 to DC	DD to FF
90 (KEY AD0) (IC401 J6)	Control button DOWN (Control switch block (MID)) S008	Control button UP (Control switch block (MID)) S006	DISPLAY WINDOW BACKLIGHT (Control switch block (TOP)) S003	WHITE BALANCE (Control switch block (TOP)) S004	EXPOSURE (Control switch block (TOP)) S005	COMPACT FLASH (Control switch block (UNDER)) S006	MEMORY STICK (Control switch block (UNDER)) S006
91 (KEY AD1) (IC401 H6)	Control button RIGHT (Control switch block (MID)) S003	Control button LEFT (Control switch block (MID)) S010	Control button CENTER (Control switch block (MID)) S007	AE LOCK (Control switch block (MID)) S012	MENU (Control switch block (MID)) S002		No key input
92 (KEY AD2) (IC401 G6)	QUICK REVIEW (Control switch block (UNDER)) S005	DIGITAL ZOOM (Control switch block (UNDER)) S004	SELF TIMER (Control switch block (UNDER)) S003	SCREEN STATUS (Control switch block (UNDER)) S002		FINDER (Control switch block (UNDER)) S001	LCD (Control switch block (UNDER)) S001
93 (KEY AD3) (IC401 J7)	OPEN (FLASH) (SW-410 board) (S001)	FLASH (SW-410 board) (S002)	METERING MODE (SW-410 board) (S005)	MACRO (SW-410 board) (S003)	BURST/BRACKET (SW-410 board) (S006)	FOCUS AUTO (SW-410 board) (S004)	FOCUS MANUAL (SW-410 board) (S004)
94 (KEY AD4) (IC401 H7)	NIGHT SHOT/ NIGHT FRAMING (SW-410 board) (S007)						No key input
95 (MODE DIAL 0) (IC401 J8)	Mode dial STILL (AE-S) (Control switch block (TOP))	Mode dial STILL (AE-A) (Control switch block (TOP))	Mode dial STILL (MANUAL) (Control switch block (TOP))	Mode dial STILL (SCN) (Control switch block (TOP))	Mode dial MOVIE (Control switch block (TOP))		No key input
96 (MODE DIAL 1) (IC401 J9)	Mode dial STILL (AUTO) (Control switch block (TOP))	Mode dial STILL (P AUTO) (Control switch block (TOP))	Mode dial PB (Control switch block (TOP))	Mode dial SET UP (Control switch block (TOP))			No key input

5. Switch check (3)

Page 60	Address B9

Function	When data = 11	When data = 01
FLASH OPEN DETECT switch (LS-067 board S001)	Close	Open

Using method:

1) Select page: 60, address: B9.
2) Read the data. By discriminating the data, the state of the switch can be discriminated.

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6. Switch check (4)

Page 80	Address 13

Function	When data = 00	When data = 01	When data = 02
Shutter button (XAE LOCK SW) (Control switch block (TOP))	OFF	ON	ON
Shutter button (XSHTR ON SW) (Control switch block (TOP))	OFF	OFF	ON

Using method:

1) Select page: 80, address: 13.
2) Read the data. By discriminating the data, the state of the switches can be discriminated.

7. Switch check (5)

Page 80	Address 14

Function	When data = 00	When data = 01
CF COVER switch (Control switch block (CENTER))	Open	Close

Using method:

1) Select page: 80, address: 14.
2) Read the data. By discriminating the data, the state of the switch can be discriminated.

8. Switch check (6)

Page 80	Address 15

Using method:

1) Select page: 80, address: 15.
2) By discriminating the data, the rotation of the control dial can be discriminated.

Control dial (Control switch block (CENTER))	Data
When rotated in the left direction.	01
When rotated in the right direction.	02

9. LED, Segment LCD check

Page 20	Address 04
Page 80	Address 12
Page 8E	Address FE

Using method:

1) Select page: 00, address: 01, set data: 01.
2) Select page: 20, address: 04, set data: 02.
3) Select page: 8E, address: FE, set data: 20.
4) Select page: 80, address: 12, set data: 01.
6) Check that all LED (Power, Charge, Tally, Access, Segment LCD back light) are lit.
7) Select page: 20, address: 04, set data: 08.
8) Check that all segment of the segment LCD are lit.
9) Select page: 20, address: 04, set data: 00.
10) Select page: 80, address: 12, set data: 00.
11) Select page: 8E, address: FE, set data: 00.
12) Select page: 00, address: 01, set data: 00.

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10. Record of Use check

Page 4F	Address 94 to 97

Address	Function	Remarks
94	Recording counter (Hexadecimal)	1000000-digit and 1000000-digit
95		1000000-digit and 10000-digit
96		1000-digit and 100-digit
97		10-digit and 1-digit

Using method:

1) The recording counter data is displayed at page: 4F, addresses: 94 to 97. These data are named D_{94}, D_{95}, D_{96} and D_{97} respectively.
2) Calculate the recording counter (N) using following equation. (Hexadecimal calculation)
   $N = D_{97} + D_{96} \times 100 + D_{95} \times 10000 + D_{94} \times 1000000$

11. Self Diagnostics Log check

Page 20	Address B0 to B8

Address	Initial value	Function
B0	00	“Repaired by” code (Occurred 1st time) *1
B1	00	“Block function” code (Occurred 1st time)
B2	00	“Detailed” code (Occurred 1st time)
B3	00	“Repaired by” code (Occurred 2nd time) *1
B4	00	“Block function” code (Occurred 2nd time)
B5	00	“Detailed” code (Occurred 2nd time)
B6	00	“Repaired by” code (Occurred 3rd time) *1
B7	00	“Block function” code (Occurred 3rd time)
B8	00	“Detailed” code (Occurred 3rd time)

*1: “C” → “01”, “E” → “03”

Using method:

1) The self diagnostics log is displayed at page: 20, addresses: B0 to B5.
   Note: These data will be erased when the lithium battery (LR-018 board) is removed.

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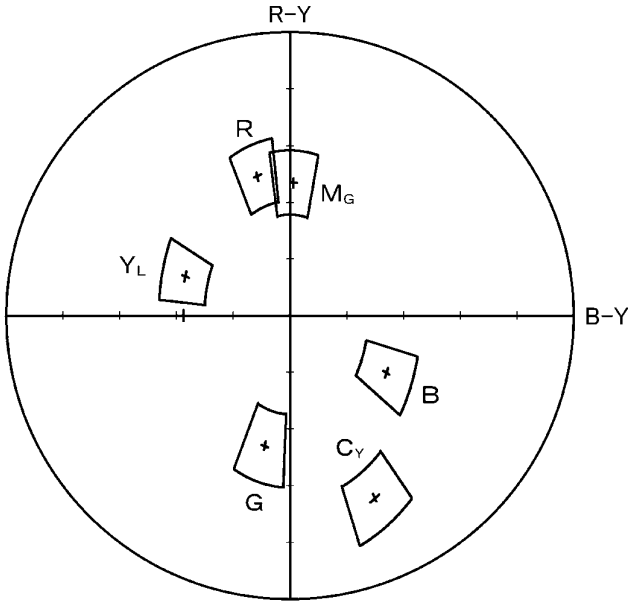
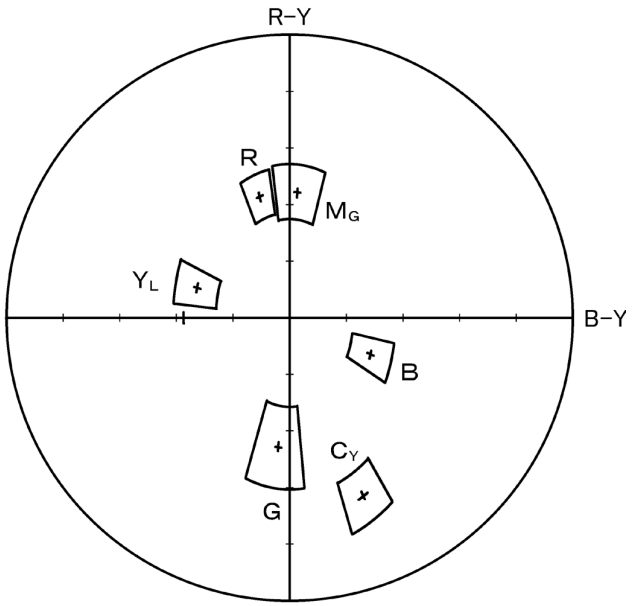
〈FOR CAMERA COLOR REPRODUCTION ADJUSTMENT〉

For CAP-Normal mode



Take a copy of CAMERA COLOR REPRODUCTION FRAME with a clear sheet for use.

For CAP-Real mode



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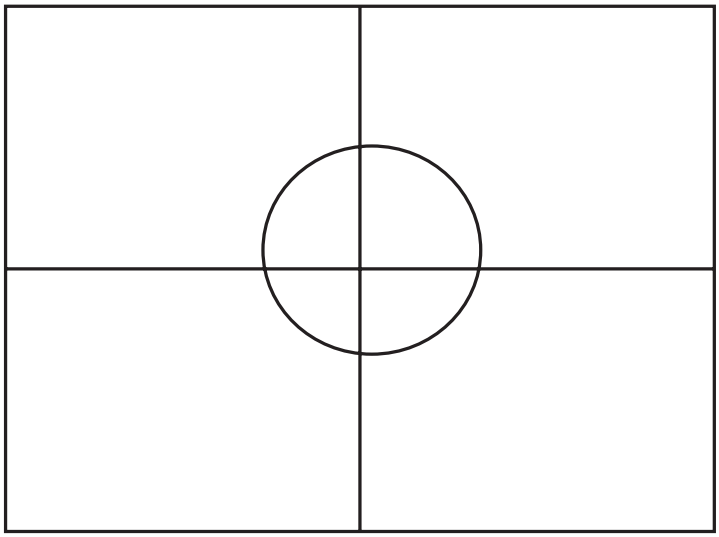
〈AF ILLUMINATION FRAME〉



Take a copy of AF ILLUMINATION FRAME with a clear sheet for use.

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DSC-F828

SONY

Auto-ADJ

SERVICE MANUAL

Ver 1.2 2004.06

SUPPLEMENT-1

File this supplement with the service manual
(PV03-022)

• Addition of Automatic Adjustment Program

- Use this Service Manual together with the Automatic Adjustment Program (DSC-F828 Auto-Adj Ver1.□r□□.exe) and the DSC-F828 C1 MATRIX ADJ (F828C1MATRIX.exe).

Note: □ (numeric value) of the file name varies depending on the version of Automatic Adjustment Program.

DSC-F828
9-876-279-82

Sony EMCS Co.

2004F0500-1
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* Color reproduction frame is shown on page 6-35.
* AF laser axis frame is shown on page 6-35.

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SECTION 6
ADJUSTMENTS

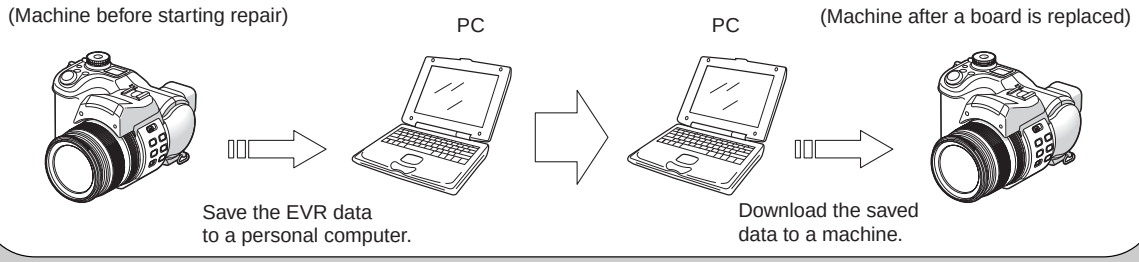
1. Before starting adjustment

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

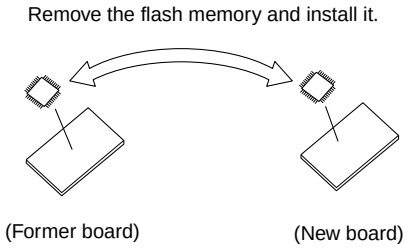
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



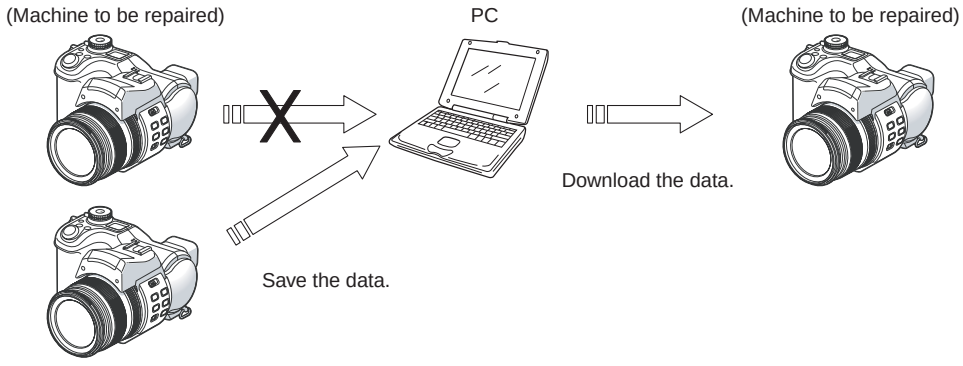
Procedure 2

Remove the flash memory from the board of the machine that is going to be repaired. Install the removed flash memory to the replaced board.



Procedure 3

When the data cannot be saved due to defective flash memory, or when the flash memory cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 6-3 for the items to be checked.)

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1-1. Adjusting items when replacing main parts and boards

When replacing main parts and boards, adjust the items indicated by ● in the following table.

Note 1: The automatic Adjustment Program does not support the “Initialization of data”. Perform it manually.

Note 2: Use the DSC-F828 C1 MATRIX ADJ (F828C1MATRIX.exe) when performing “Color Shade Check”, “Linear Matrix Adj.” and “AWB 3200K/5800K Standard Data Input” of Camera System Adjustment.

Adjusting item	Adjustment	Replaced parts															
		Block replacement					Mounted parts replacement						Board replacement			Flash memory replacement	
		Lens device	Xenon tube	EVF block	LCD block	LCD block	LB-091 board	LS-067 board	SY-096 board	SY-096 board	SY-096 board	SY-096 board	LB-091 board	LS-067 board	SY-096 board	SY-096 board	
				LCD unit (LCD902)	LCD unit (LCD901)	Back light unit	D001 (EVF back light)	D001 (Laser unit)	IC301 (Camera DSP)	IC303 (Video amp.)	IC801 (LCD DRIVER)	IC902 (EVF DRIVER)	(COMPLETE)	(COMPLETE)	(COMPLETE)	IC501 (Camera DSP) (With built-in flash memory)	
(Note 1)	Initialization of data														●	●	
VIDEO adjustment	Video output level adj.								●	●					●	●	
CAMERA adjustment 1	Iris reset sensor adj.	●													●	●	
	Flange back adj.																
CAMERA adjustment 2	Flange back check	●													●	●	
(Note 2)	Color shade check	●													●	●	
CAMERA adjustment 3	F No. compensation																
	Mechanical shutter adj.	●													●	●	
	Light value adj.																
(Note 2)	Linear matrix adj.	●													●	●	
	AWB 3200K/5800K standard data input																
CAMERA adjustment 4	Color reproduction check																
	CCD linearity check	●													●	●	
	CCD white defect compensation check																
	CCD black defect compensation check																
CAMERA adjustment 5	Strobe adj.	●	●					●						●	●	●	
	AF laser output adj.																
CAMERA adjustment 6	AF laser axis check	●						●						●	●	●	
EVF adjustment	EVF initial data input																
	VCO adj.																
	Bright adj.			●			●		●			●	●		●	●	
	Contrast adj.																
	V-COM adj.																
	White balance adj.																
LCD adjustment	LCD initial data input																
	VCO adj.																
	Contrast adj.				●	●			●		●				●	●	
	V-COM adj.																
	White balance adj.																

Table 6-1-1

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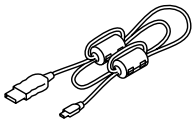
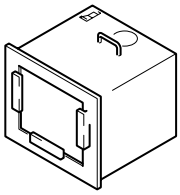
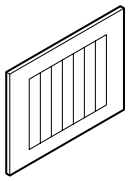
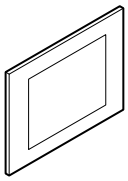
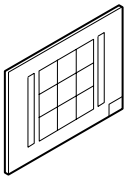
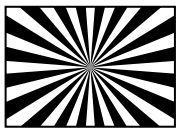
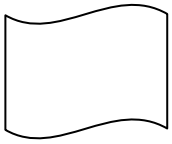
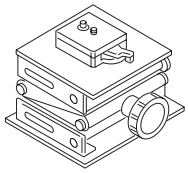
6-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENTS

1-1-1. List of Service Tools

• Oscilloscope • Color monitor • Vectorscope • AC power adapter
• Calculating machine capable of calculating hexadecimal numbers.

J-1 Personal computer (Note)	J-2 HASP key and application for adjustment (SEUS) Contact our service headquater of each area how to get the application for adjustment (SEUS) and HASP key.	J-3  USB cable 1-827-038-11
J-4  Pattern box PTB-450 J-6082-200-A or Small pattern box PTB-1450 J-6082-557-A	J-5  Color bar chart For PTB-450: J-6020-250-A	J-6  Clear chart For PTB-450: J-6080-621-A For PTB-1450: J-6082-560-A
J-7  9 colors chart For PTB-1450: J-6082-562-A	J-8  Siemens star chart J-6080-875-A	J-9  Back ground paper J-2501-130-A
J-10  Camera table J-6082-384-A		

Note: Personal computer
OS: Windows98/98SE/Me/2000/XP Home/XP Pro
RAM: 256MB or more recommended
USB: 2.0 recommended (also compatible with 1.1)
Two connectors are required.

Fig. 6-1-1

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1-1-2. Preparations

1) Connect the equipment for adjustments according to Fig. 6-1-3.
2) Start up the application for adjustment (SEUS).

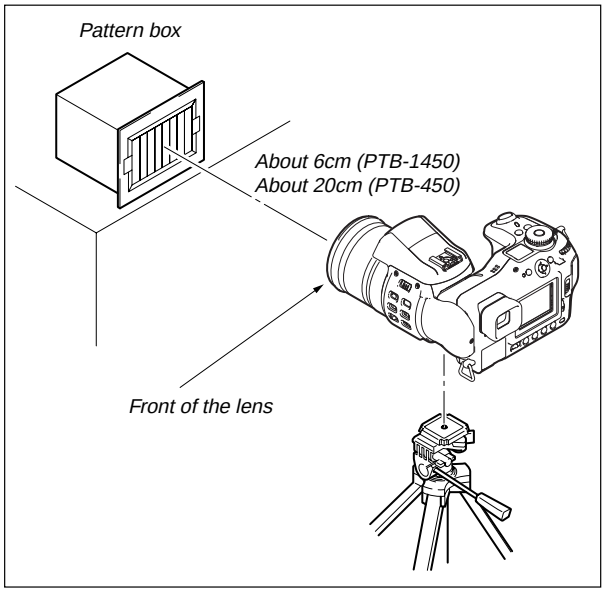

Fig. 6-1-2

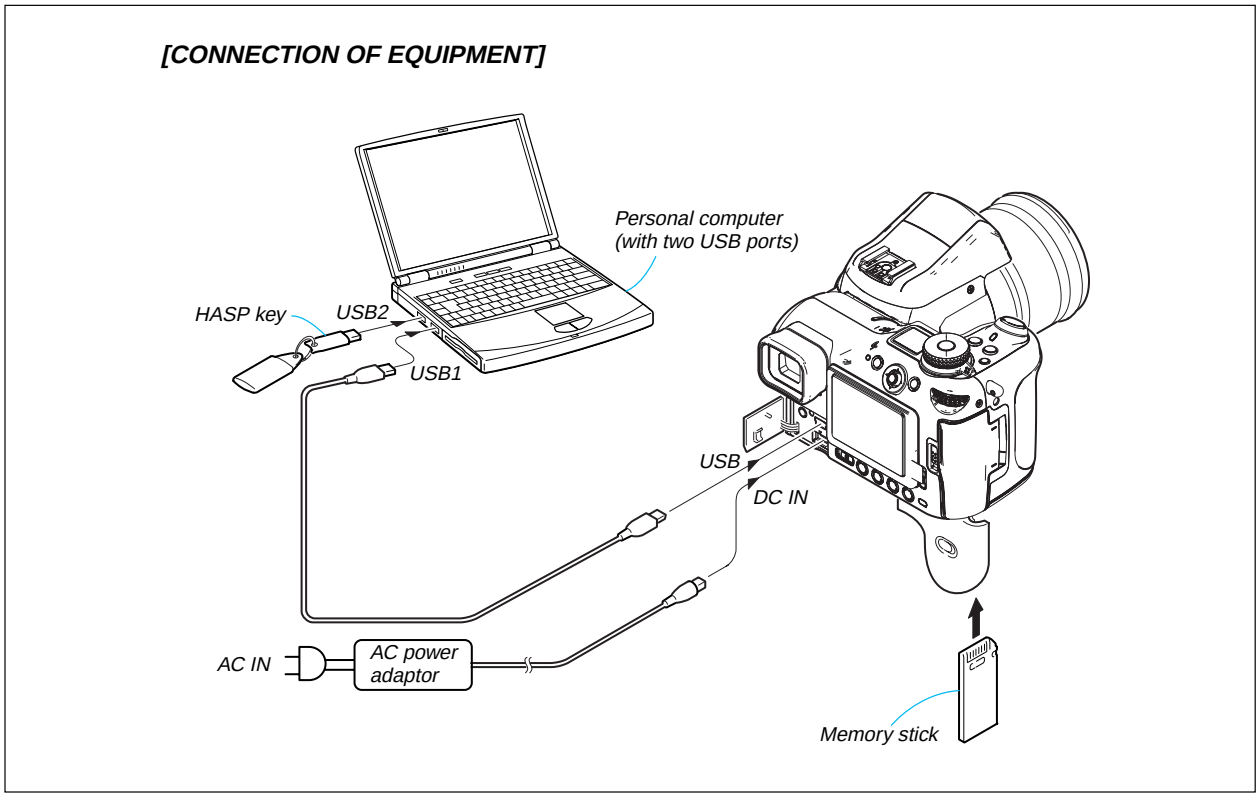

Fig. 6-1-3

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1-1-3. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments.

1. Mode dial ..... STILL (P AUTO) (**P**)
2. ZOOM ..... WIDE end
3. MS/CF ..... MS (Memory stick)
4. MACRO ( ) ..... ON
5. WHITE BALANCE ..... AUTO
6. EV 0EV
7. FOCUS ..... AUTO
8. USB CONNECT (SET UP setting) ..... NORMAL
9. VIDEO OUT (SET UP setting) ..... NTSC

2. Order of Adjustments

Basically carry out adjustments in the order given.

Color bar chart (Standard picture frame) (PTB-450)

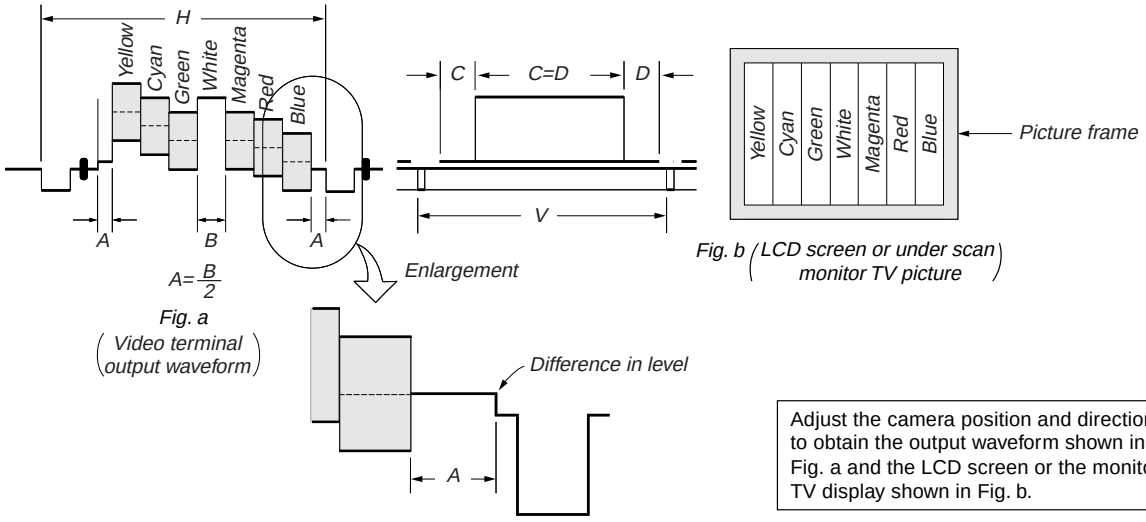

Fig. a (Video terminal output waveform)

Fig. b (LCD screen or under scan monitor TV picture)

Adjust the camera position and direction to obtain the output waveform shown in Fig. a and the LCD screen or the monitor TV display shown in Fig. b.

9 colors chart (Standard picture frame) (PTB-1450)

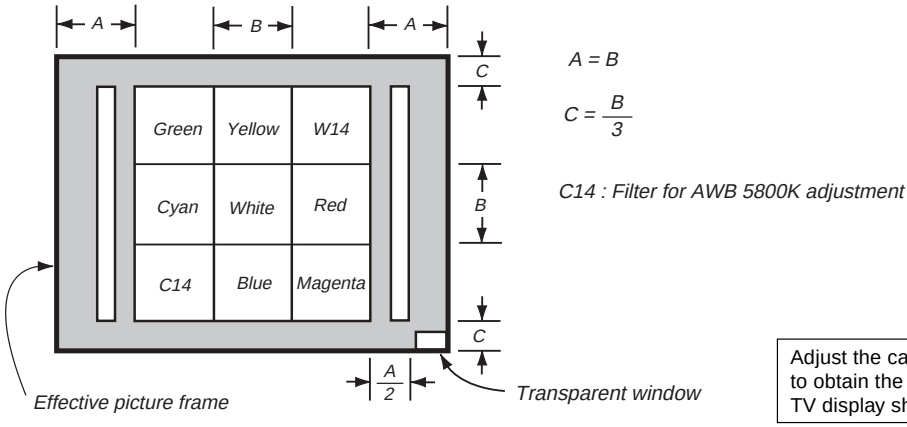

Fig. c (LCD screen or under scan monitor TV picture)

Adjust the camera position and direction to obtain the LCD screen or the monitor TV display shown in Fig. c.

Fig. 6-1-4

3. Subjects

1) Color bar chart (Standard picture frame) (PTB-450)
   When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 6-1-4. (Standard picture frame)
2) 9 colors chart (Standard picture frame) (PTB-1450)
   When performing adjustments using the 9 colors chart, adjust the picture frame as shown in Fig. 6-1-4. (Standard picture frame)
3) Clear chart (Standard picture frame) (PTB-450/PTB-1450)
   Remove the color bar chart (PTB-450) or 9 colors chart (PTB-1450) from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time.)

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4. Preparing the Flash Adjustment Box

A dark room is required to provide an accurate flash adjustment. If it is not available, prepare the flash adjustment box as given below;

1) Provide woody board A, B and C of 15 mm thickness.
   Dimensions without brackets are for a box of 1 m in depth.
   Dimensions in brackets are for a box of 50 cm in depth.

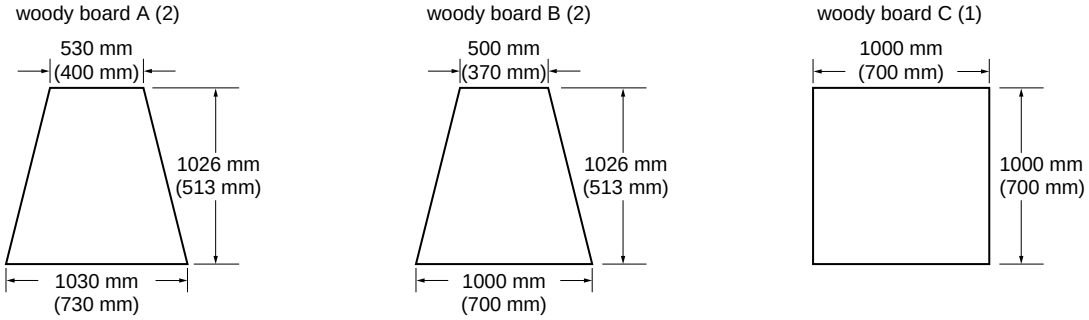

Fig. 6-1-5

2) Apply black mat paint to one side of woody board A and B.
3) Attach background paper (J-2501-130-A) to woody board C.
4) Assemble so that the black sides and the background paper side of woody board A, B and C are internal. (Fig 6-1-6)

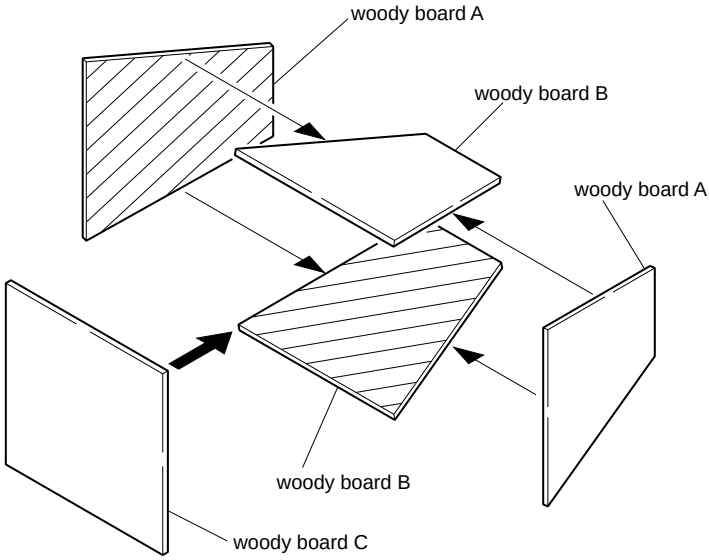

Fig. 6-1-6

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1-1-4. Using Method of SEUS

The application for adjustment (SEUS) is used to change the coefficient for calculating the signal processing or EVR data. The SEUS performs two-way communication between PC and set through the USB terminal. The two-way communication result data can be written to the nonvolatile memory.

1. Connection

1) Connect the HASP key to the USB terminal of the PC.
2) Connect the PC and set with the USB cable.
3) Confirm that the set starts in the USB mode.
4) Start the SEUS on the PC.
5) Click [Connect] on the SEUS screen. If the connection is normal, the SEUS screen will be as shown in Fig. 6-1-7, indicating the "connected" state.

Note: The SEUS will go in "disconnect" state, if the set is turned off (for instance, by resetting the set). In such a case, click [Connect] on the SEUS screen to restore the "connected" state.

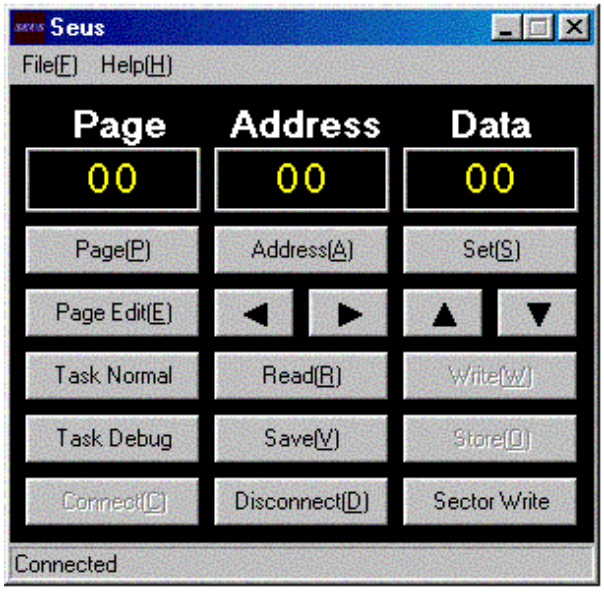

Fig. 6-1-7

2. Operation

- Page change
  To change the page, click [Page] on the SEUS screen and enter the page to be changed. The page is displayed in hexadecimal notation.

- Address change
  To change the address, click [Address] on the SEUS screen and enter the address to be changed. The address is displayed in hexadecimal notation.

- Data change
  To change the data, click [Set] on the SEUS screen and enter the data. The data is displayed in hexadecimal notation.
  This operation does not write the data to the nonvolatile memory.

- Data saving
  To write the all changed data to the nonvolatile memory, click [Save] on the SEUS screen and wait for more than 3 sec.

- Data reading
  The data displayed on the SEUS screen are the data values at the time when the pages and addresses were set, and they are not updated automatically. To check the data change, click [Read] on the SEUS screen and update the displayed data.

1-1-5. Precaution on Use of SEUS

Wrong SEUS operation could clear correct adjustment data. To prevent the data clear by mistake, it is recommended to save all adjustment data by clicking [Page Edit] on the SEUS screen before starting the adjustment.

Saving Method:

1) Click [Page Edit] on the SEUS screen to display the SEUS PAGE EDIT screen.
2) Click [Page], and enter the page number to be saved.
3) Click [Page] to read the data to be saved from the camera.
4) Click [File] and save the data to PC.

Loading Method:

1) Select page: 00, address: 01 and set data: 01.
2) Click [Page Edit] on the SEUS screen to display the SEUS PAGE EDIT screen.
3) Click [File] and load the data from PC.
4) Click [Write] on the SEUS PAGE EDIT screen.
5) Click [Close] to close the SEUS PAGE EDIT screen.
6) Click [Save] on the SEUS screen.
7) Wait for more than 3 sec.
8) Select page: 00, address: 01 and set data: 00.

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1-2. ADJUSTMENT PROGRAMS

The DSC-F828 is adjusted with the Automatic Adjustment Program and the DSC-F828 C1 MATRIX ADJ.
The Automatic Adjustment Program automatically controls the adjustment operations that were formerly entered manually on the operation screen of the SEUS (some adjustments may be manually operated on the SEUS operation screen).
The DSC-F828 C1 MATRIX ADJ automatically performs "Color Shade Check" and "Linear Matrix and AWB Adjustment" of Camera System Adjustment.

1-2-1. Automatic Adjustment Program

1. Precautions When Using Automatic Adjustment Program

1) The Automatic Adjustment Program writes the adjustment results such as EVR data to the set through two-way communication with the camera via the SEUS. Accordingly, the Automatic Adjustment Program must be used in the environment where the SEUS operates.
2) The program run time may vary depending on the environment of the personal computer used.
3) Even if the Automatic Adjustment Program is used without starting the SEUS, the SEUS will start automatically when the adjustment is executed. However, it may take time for the SEUS to start, and therefore the Automatic Adjustment Program should be used with the SEUS started in order to reduce the program run time.

2. Start of Automatic Adjustment Program

Double-click the application file (DSC-F828 Auto-Adj Ver_1.□r□□.exe), and the Automatic Adjustment Program will start.

Note: □ (numeric value) of the file name varies depending on the version of Automatic Adjustment Program.

3. Function of Each Button on Main Menu Screen

When the Automatic Adjustment Program started, the Main Menu screen in Fig. 6-1-8 will appear. On this screen, select each adjustment section.

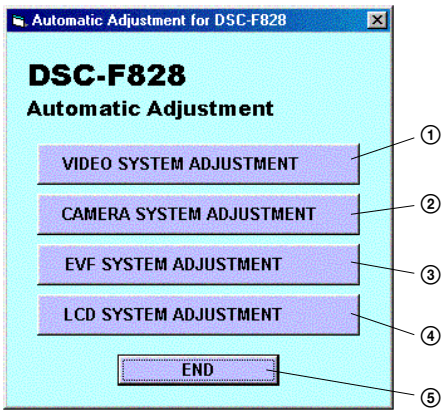

Fig. 6-1-8

① VIDEO SYSTEM ADJUSTMENT button
The "VIDEO SYSTEM ADJUSTMENT" screen appears.

② CAMERA SYSTEM ADJUSTMENT button
The "CAMERA SYSTEM ADJUSTMENT" screen appears.

③ EVF SYSTEM ADJUSTMENT button
The "EVF SYSTEM ADJUSTMENT" screen appears.

④ LCD SYSTEM ADJUSTMENT button
The "LCD SYSTEM ADJUSTMENT" screen appears.

⑤ END button
The Automatic Adjustment Program finishes.

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1-2-2. DSC-F828 C1 MATRIX ADJ

1. Application Environment

OS: Windows 98/98SE/Me/2000/XP
RAM: 256MB or more recommended
USB: 2.0 recommended (also compatible with 1.1)
Two connectors are required.

2. Installation Method

Extract the file compressed in the ZIP format (828matrix.zip). Execute the extracted file (setup.exe), and the installer will start. Install the program following the instructions given on the installer screen.

3. Notes When Using the DSC-F828 C1 MATRIX ADJ

1) The SEUS must be installed in the PC.
2) The HASP Key for SEUS must be connected to the USB connector. The program will not start unless the HASP Key is connected.

4. Starting Method of DSC-F828 C1 MATRIX ADJ

Click the Start button on the task bar, and click the DSC-F828 C1 MATRIX ADJ from the Programs, and the program will start.

5. Screen and Function of Each Button of DSC-F828 C1 MATRIX ADJ

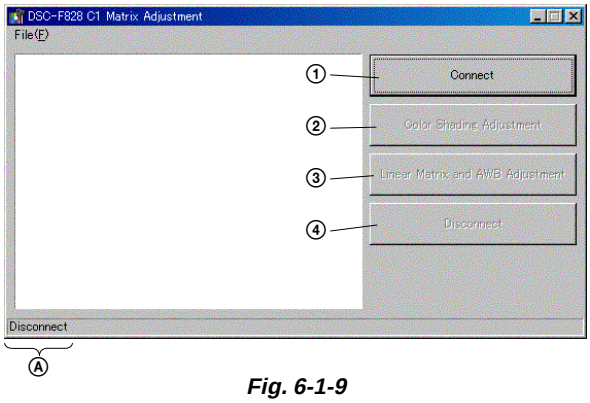

Fig. 6-1-9

① Connect button
Makes connection to the camera and switches the camera to the adjustment mode. In the case of successful connection to the camera, the indication at the part Ⓐ changes to "Connected" and the Color Shading Adjustment button, Linear Matrix and AWB Adjustment button and the Disconnect button become active.

② Color Shading Adjustment button
Starts the Color Shading Adjustment.

③ Linear Matrix and AWB Adjustment button
Starts the Linear Matrix and AWB Adjustment.

④ Disconnect button
Cancels the connection to the camera.

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1-3. VIDEO SYSTEM ADJUSTMENTS

1-3-1. Function of Each Button on Video System Adjustment Screen

Click the [VIDEO SYSTEM ADJUSTMENT] button on the Main Menu screen, and the "VIDEO SYSTEM ADJUSTMENT" screen in Fig. 6-1-10 will appear.

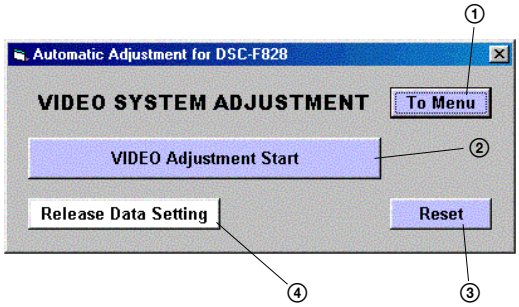

Fig. 6-1-10

① [To Menu] button
The Main Menu screen comes back.

② [VIDEO Adjustment Start] button
"Video Adjustment" starts.

③ [Reset] button
This button functions same as the Reset button of the camera.

④ [Release Data Setting] button
The data setting at the adjustment is cancelled.
During the data setting, the button color changes from "white" to "red". When the data setting is cancelled, the button color returns to "white".
(Use this button when an error occurred in the video adjustment. If the adjustment completed successfully, the data setting is automatically cancelled and the button color returns to "white".)

1-3-2. Adjustment Items of VIDEO System Adjustment

The adjustment items of video system adjustment are as listed in Table 6-1-2. The Automatic Adjustment Program executes the adjustment items if the VIDEO Adjustment Start button is clicked.

Button Name	Adjustment	Signal	Page	Address
VIDEO Adjustment	VIDEO Output Level Adj.	Arbitrary	8F	D0

Table 6-1-2

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1-3-3. Adjusting Method

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Video Adj.
2. Video Output Level Adj.
3. Release of Data Setting during Video Adj.

[Specified value of video output level adj.]

Measurement Point	Video terminal of AV OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Specified Value	Sync level: A = 286 ± 5 mV (NTSC mode) A = 300 ± 5 mV (PAL mode) Burst level: B = 286 ± 30 mV (NTSC mode) B = 300 ± 30 mV (PAL mode)

[Adjusting method]

1) Click the VIDEO Adjustment Start button.
2) The Automatic Adjustment Program executes the "1. Data Setting during Video Adj.".
3) If "1. Data Setting during Video Adj." completed successfully, the next message is displayed during the execution of "2. Video Output Level Adj.". Using the UP/DOWN key on the SEUS Operation screen, adjust so that the sync level of the video signals satisfies the specified value. After the adjustment, check that the burst level of the video signals satisfies the specified value, and click the OK button in the message.

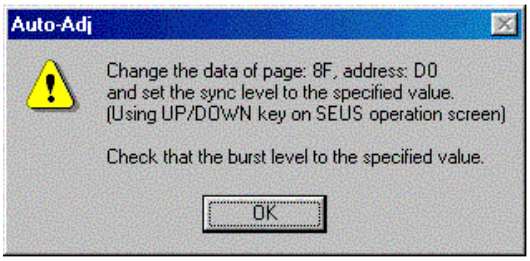
Auto-Adj
Change the data of page: 8F, address: D0
and set the sync level to the specified value.
(Using UP/DOWN key on SEUS operation screen)
Check that the burst level to the specified value.
OK

Fig. 6-1-11

4) If the OK button button is clicked, "3. Release of Data Setting during Video Adj." will be executed.
5) Upon successful completion of all items of the VIDEO adjustment, the following message is displayed. Click the OK button.

Fig. 6-1-12

SEUS operation screen

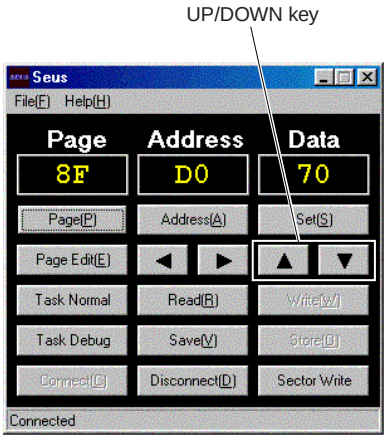

Fig. 6-1-13

Check on the oscilloscope

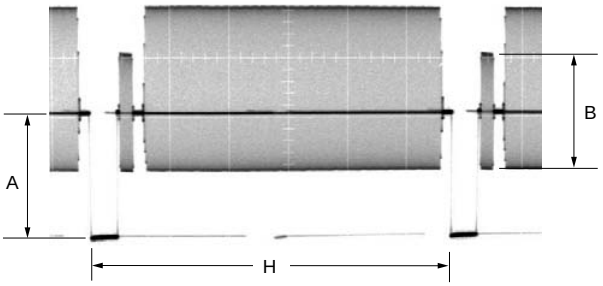

Fig. 6-1-14

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1-4. CAMERA SYSTEM ADJUSTMENTS

1-4-1. Function of Each Button on Camera System Adjustment Screen

Click the CAMERA SYSTEM ADJUSTMENT button on the Main Menu screen, and the "CAMERA SYSTEM ADJUSTMENT" screen in Fig. 6-1-15 will appear.

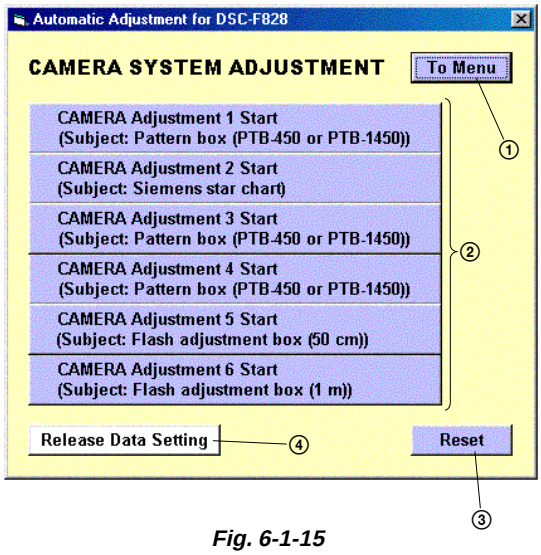

Fig. 6-1-15

① To Menu button
The Main Menu screen comes back.

② Adjustment start buttons
- CAMERA Adjustment 1 Start button
  "Camera Adjustment 1" starts.
- CAMERA Adjustment 2 Start button
  "Camera Adjustment 2" starts.
- CAMERA Adjustment 3 Start button
  "Camera Adjustment 3" starts.
- CAMERA Adjustment 4 Start button
  "Camera Adjustment 4" starts.
- CAMERA Adjustment 5 Start button
  "Camera Adjustment 5" starts.
- CAMERA Adjustment 6 Start button
  "Camera Adjustment 6" starts.

③ Reset button
This button functions same as the Reset button of the camera.

④ Release Data Setting button
The data setting at the adjustment is cancelled.
During the data setting, the button color changes from "white" to "red". When the data setting is cancelled, the button color returns to "white".
(Use this button when an error occurred in the camera adjustment 1-6. If the adjustment completed successfully, the data setting is automatically cancelled and the button color returns to "white".)

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1-4-2. Adjustment Items of Camera System Adjustment

The adjustment items of camera system adjustment are as listed in Table 6-1-3. The Automatic Adjustment Program divides the adjustment items into four, camera adjustment 1-6. Clicking either CAMERA Adjustment Start button allows the adjustment item which corresponds to that button to be executed.
The adjustment conditions of the subject and filter vary depending on which item is adjusted. The Adjustment Program displays an instruction for the subject and filter as a message during the adjustment.

Button Name	Adjustment	Subject	Adjustment Page	Adjustment Address
CAMERA Adjustment 1	IRIS Reset Sensor Adj.	Clear chart (PTB-450/PTB-1450) (All white)	6F	5E, 5F
	Flange Back Adj.	Arbitrary	6F	18 to 3E, 40 to 53
CAMERA Adjustment 2	Flange Back Check	Siemens star (1.0m from front the lens) (Luminance: 200 to 400 lux)		
(Note)	Color Shade Check	Clear chart (PTB-1450) (Standard picture frame)	6F	06, 07
CAMERA Adjustment 3	F No. Compensation	Clear chart (PTB-450/PTB-1450) (Standard picture frame)	6F	60 to 64, 6B to 6D
	Mechanical Shutter Adj.		6F	6B to 6D, B8 to D7
	Light Value Adj.		6F	65 to 67
(Note)	Linear Matrix Adj.	9 colors chart (PTB-1450) (Standard picture frame)	6E	80 to 9F
	AWB 3200K/5800K Standard Data Input		6E	04 to 21, 24 to 49
CAMERA Adjustment 4	Color Reproduction Check	Color bar chart (PTB-450) (Standard picture frame) 9 colors chart (PTB-1450) (Standard picture frame)		
	CCD Linearity Check	Clear chart (PTB-450/PTB-1450) (Standard picture frame)		
	CCD White Defect Compensation Check			
	CCD Black Defect Compensation Check			
CAMERA Adjustment 5	Strobe Adj.	Flash adjustment box (50 cm)	6E	72 to 75
			6F	D8 to EF
	AF Laser Output Adj.		6F	10 to 16
CAMERA Adjustment 6	AF Laser Axis Check	Flash adjustment box (1 m)		

Note: Use the DSC-F828 C1 MATRIX ADJ (F828C1MATRIX.exe) when performing "Color Shade Check", "Linear Matrix Adj." and "AWB 3200K/5800K Standard Data Input" of Camera System Adjustment.

Table 6-1-3

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1-4-3. Adjusting Method

1. CAMERA Adjustment 1

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. IRIS Reset Sensor Adj.
3. Reset the Camera
4. Flange Back Adj.
5. Release of Data Setting during Camera Adj.

[Adjusting method]

1) Click the CAMERA Adjustment 1 Start button.
2) The Automatic Adjustment Program executes "1. Data Setting during Camera Adj.".
3) Upon successful completion of the "1. Data Setting during Camera Adj.", the following message is displayed. Set the subject in accordance with the message.

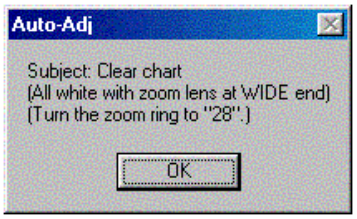

Fig. 6-1-16

4) If the OK button is clicked, "2. IRIS Reset Sensor Adj." will be executed.
5) Upon successful completion "2. IRIS Reset Sensor Adj.", "3. Reset the Camera" is executed.
6) Upon successful completion of the "3. Reset the Camera", the following message is displayed during execution in "4. Flange Back Adj.". Set the ZOOM to the TELE end and click the OK button.

Fig. 6-1-17

7) Upon completion of "4. Flange Back Adj.", "5. Release of Data Setting during Camera Adj." is executed.
8) Upon successful completion of all items of the CAMERA Adjustment 1, the following message is displayed. Click the OK button.

Fig. 6-1-18

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2. CAMERA Adjustment 2

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. Flange Back Check
3. Release of Data Setting during Camera Adj.

[Adjusting method]

1) Click the CAMERA Adjustment 2 Start button.
2) The Automatic Adjustment Program executes "1. Data Setting during Camera Adj.".
3) Upon successful completion of the "1. Data Setting during Camera Adj.", the following message is displayed. Set the subject in accordance with the message.

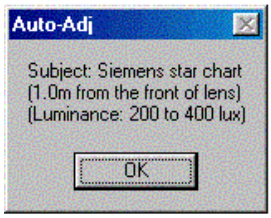

Fig. 6-1-19

4) If the OK button is clicked, "2. Flange Back Check" is executed. The following messages are displayed, and then operate the camera to make a check in accordance with the messages.

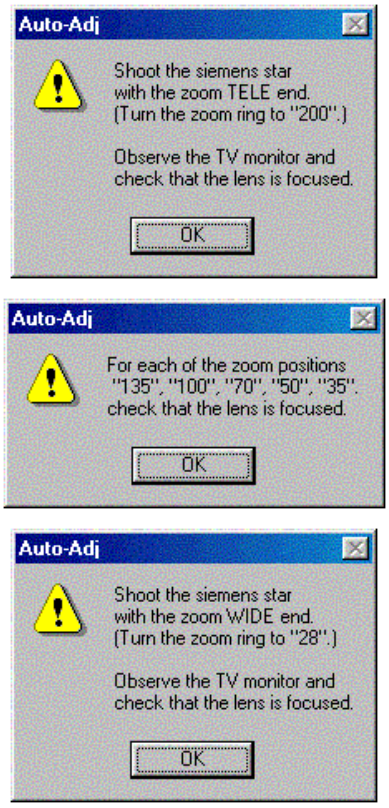

Fig. 6-1-20

5) Upon completion of "2. Flange Back Check", "3. Release of Data Setting during Camera Adj." is executed.

6) Upon successful completion of all items of the CAMERA Adjustment 2, the following message is displayed. Click the OK button.

Fig. 6-1-21

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3. Picture Frame Setting (PTB-450) (Standard Picture Frame)

In the "CAMERA Adjustment 3" and "CAMERA Adjustment 4", set the picture frame so as to attain the positions shown in the following figure when shooting the color bar chart.

Check on the oscilloscope

Measurement Point: Video terminal of A/V OUT jack
(75Ω terminated)

1. Horizontal period

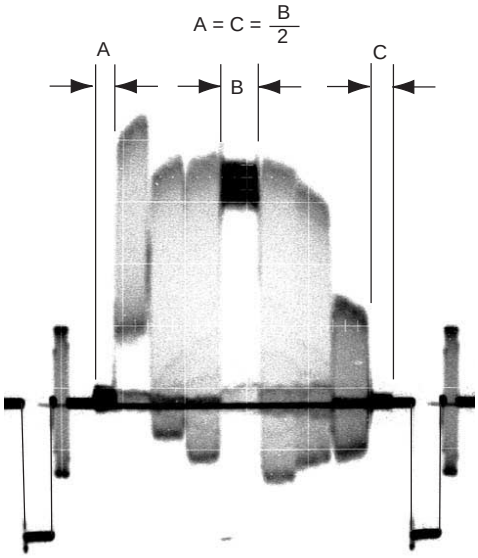

Fig. 6-1-22

2. Vertical period

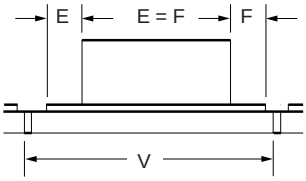

Fig. 6-1-23

Check on the monitor TV

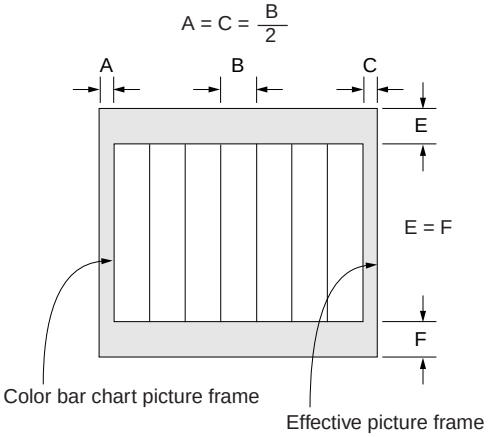

Fig. 6-1-24

4. Picture Frame Setting (PTB-1450) (Standard Picture Frame)

In the "Color Shade Check", "CAMERA Adjustment 3", "Linear Matrix and AWB Adjustment" and "CAMERA Adjustment 4", set the picture frame so as to attain the positions shown in the following figure when shooting the 9 colors chart.

Check on the oscilloscope

Measurement Point: Video terminal of A/V OUT jack
(75Ω terminated)

1. Horizontal period

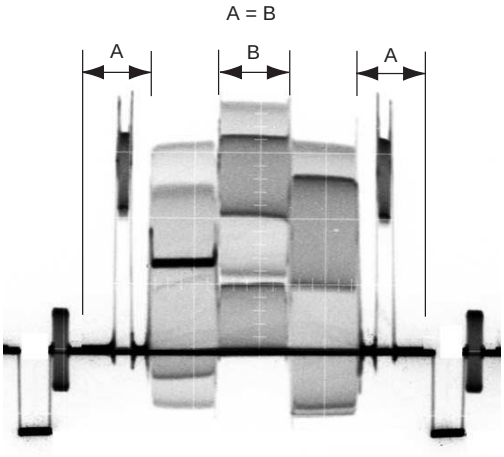

Fig. 6-1-25

2. Vertical period

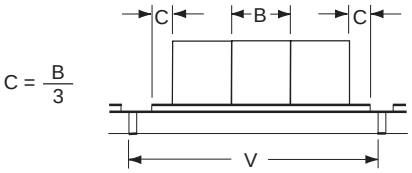

Fig. 6-1-26

Check on the monitor TV

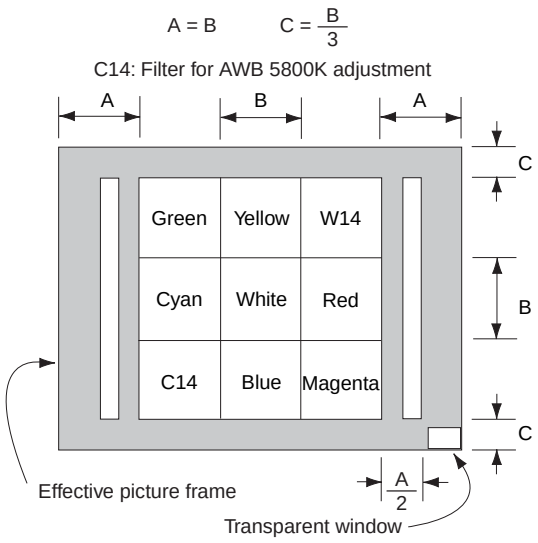

Fig. 6-1-27

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5. Color Shade Check

Compensate the color shade.

Mode	STILL (P AUTO) (**P**)
Subject	Clear chart (PTB-1450) (Standard picture frame) About 6cm from the front of the lens
Adjustment Page	6F
Adjustment Address	06, 07

Note 1: Check that there are no reflections on the clear chart.

Switch setting:

Mode dial ..... STILL (P AUTO) (**P**)
ZOOM ..... WIDE end (Turn the zoom ring to "28")
MACRO ..... ON
FOCUS ..... MANUAL

Adjusting method:

1) Start the DSC-F828 C1 MATRIX ADJ on the PC.
2) Click Connect on the DSC-F828 C1 MATRIX Adjustment screen. If the connection is normal, the DSC-F828 C1 MATRIX Adjustment screen will be as shown in bellow, indicating the "connected" state
3) Set up the switches of camera as above-mentioned.
4) Check that the picture frame is the standard picture frame.
5) Click Color Shading Adjustment on the DSC-F828 C1 MATRIX Adjustment screen.

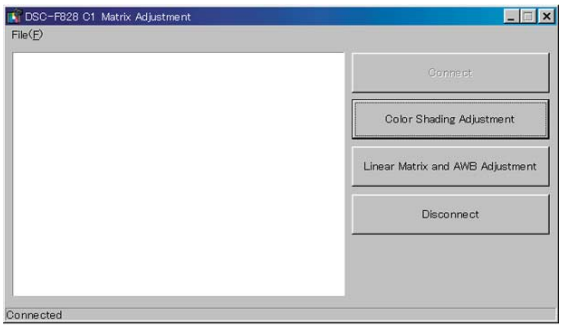

Fig. 6-1-28

6) Color shading adjustment is performed automatically.

Fig. 6-1-29

7) When the "Completion of adjustment" message is displayed. Click the OK button.

Fig. 6-1-30

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6. CAMERA Adjustment 3

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. Picture Frame Setting
3. F No. Compensation
4. Mechanical Shutter Adj.
5. Light Value Adj.
6. Release of Data Setting during Camera Adj.

[Adjusting method]

1) Click the CAMERA Adjustment 3 Start button.
2) The Automatic Adjustment Program executes the "1. Data Setting during Camera Adj.".
3) Upon successful completion of "1. Data Setting during Camera Adj.", "2. Picture Frame Setting" is executed. The following message is displayed, and then referring to "Picture Frame Setting" (see page 6-16), set the subject and click the OK button.

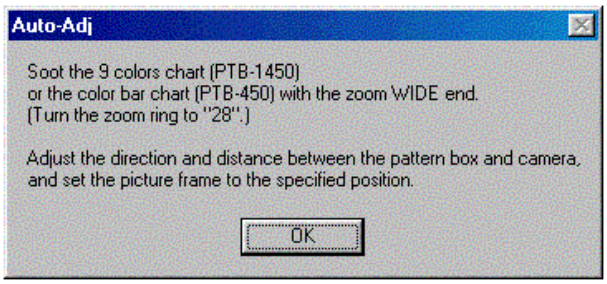
Auto-Adj
Soot the 9 colors chart (PTB-1450)
or the color bar chart (PTB-450) with the zoom WIDE end.
(Turn the zoom ring to "28".)
Adjust the direction and distance between the pattern box and camera,
and set the picture frame to the specified position.
OK

Fig. 6-1-31

4) After that, the next message is displayed. Using manual focus ring, adjust the focus.

Fig. 6-1-32

5) If the OK button is clicked, the following message is displayed. Set the subject in accordance with the message.

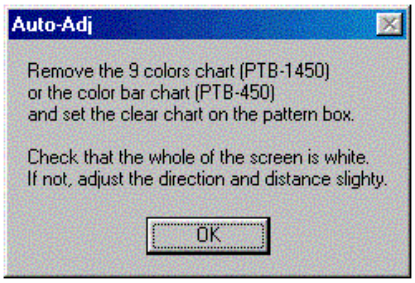
Auto-Adj
Remove the 9 colors chart (PTB-1450)
or the color bar chart (PTB-450)
and set the clear chart on the pattern box.
Check that the whole of the screen is white.
If not, adjust the direction and distance slighty.
OK

Fig. 6-1-33

6) Click the OK button, and the items from "3. F No. Compensation" to "6. Release of Data Setting during Camera Adj." will be executed.

7) Upon successful completion of all items of the CAMERA Adjustment 3, the following message is displayed. Click the OK button.

Fig. 6-1-34

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7. Linear Matrix and AWB Adjustment

7-1. Preparation (Get Reference Data)

In this work, acquire a reference data for the liner matrix adjustment using a DSC-F828 camera that operates normally. And saves the data in the inside of the PC. Therefore, **if the same pattern box and the same 9 colors chart are used, it is not necessary to perform "Get Reference Data" again.** The reference data (GodRawData.CSV) is saved in the ProgramFiles\Sony\F828C1MATRIX holder of the C drive.

Mode	STILL (P AUTO) (**P**)
Subject	9 colors chart (PTB-1450) (Standard picture frame) About 6cm from the front of the lens

Note 1: When the reference data is acquired using a non-adjusted camera. The linear matrix adjustment cannot be performed correctly.

Switch setting:

Mode dial ..... STILL (P AUTO) (**P**)
ZOOM ..... WIDE end (Turn the zoom ring to "28")
MACRO ..... ON
FOCUS ..... MANUAL

Adjusting method:

1) Prepare a DSC-F828 camera that operates normally, and this camera is named a reference camera.
2) Remove the camera under adjustment and installed the reference camera instead.
3) Start the DSC-F828 C1 MATRIX ADJ on the PC.
4) Click Connect on the DSC-F828 C1 MATRIX Adjustment screen.
5) Set up the switches of the reference camera as above-mentioned.
6) Shoot the 9 colors chart with the standard picture frame. (Refer to "4. Picture Frame Setting (PTB-1450)".
7) Adjust the focus..
8) Click Get Reference Data of the file menu of the DSC-F828 C1 MATRIX Adjustment screen.

Note 2: When the "File over write" message is displayed, a reference data file (GodRawData.CSV) exists already in the Program Files\Sony\F828C1MATRIX holder of the C drive. If you want to save this file, rename it or move it to other holder.

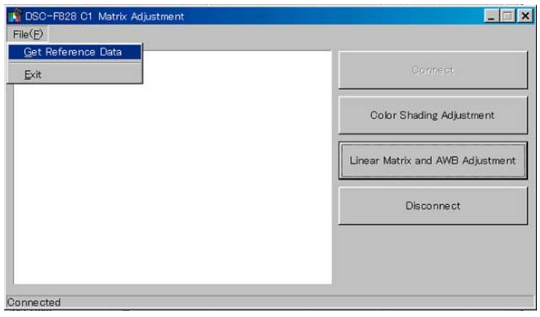

Fig. 6-1-35

9) Acquisition of the reference data is performed automatically.

Note 3: When the "Framing check" message is displayed, correct the picture frame, and repeat from step 8).

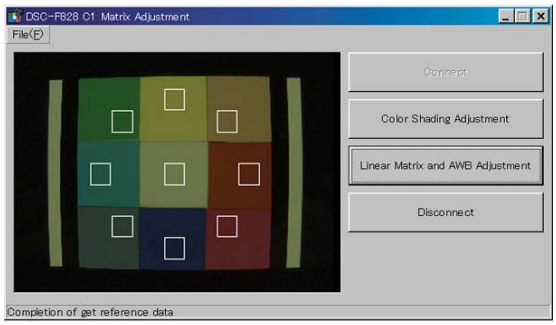

Fig. 6-1-36

10) When the "Completion of get reference data" message is displayed. Click the OK button.

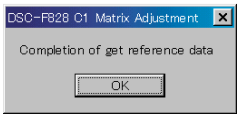

Fig. 6-1-37

11) Remove the reference camera and installed the camera under adjustment instead.

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7-2. Linear Matrix and AWB Adjustment

This adjustment does the following adjustment items automatically.

Linear matrix adjustment
Compensate the dispersion of the linear matrix vale of the CCD imager.
AWB 3200K/5800K (Mon) standard data input
Acquire the white balance standard data at 3200K and 5800K in monitoring mode.
AWB 3200K/5800K (Cap) standard data input
Acquire the white balance standard data at 3200K and 5800K in capture mode.

Mode	STILL (P AUTO) (**P**)
Subject	9 colors chart (PTB-1450) (Standard picture frame) About 6cm from the front of the lens
Adjustment Page	6E
Adjustment Address	80 to 9F (Linear matrix adjustment) 04 to 21, 24 to 49 (AWB 3200K/5800K standard data input)

Switch setting:

Mode dial ..... STILL (P AUTO) (**P**)
ZOOM ..... WIDE end (Turn the zoom ring to "28")
MACRO ..... ON
FOCUS ..... MANUAL

Adjusting method:

1) Install the camera for adjustment.
2) Start the DSC-F828 C1 MATRIX ADJ on the PC.
3) Click Connect on the DSC-F828 C1 MATRIX Adjustment screen.
4) Set up the switches of the camera as above-mentioned.
5) Shoot the 9 colors chart with the standard picture frame. (Refer to "4. Picture Frame Setting (PTB-1450)".
6) Adjust the focus..
7) Click Linear Matrix and AWB Adjustment on the DSC-F828 C1 MATRIX Adjustment screen.

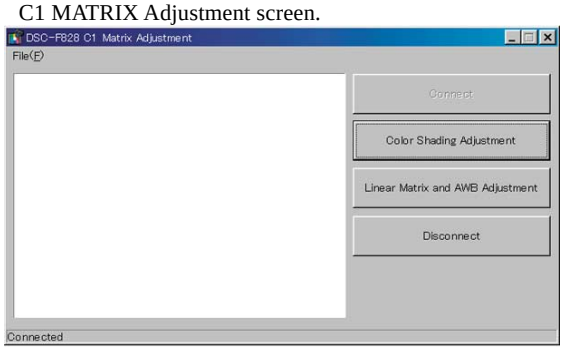

Fig. 6-1-38

8) The following adjustments are performed automatically.
Linear matrix adjustment
AWB 3200K/5800K (Mon) standard data input
AWB 3200K/5800K (Cap) standard data input

Note: When the "Framing check" message is displayed, correct the picture frame, and repeat from step 7).

When the "File C:\ProgramFiles\Sony\F828C1MATRIX\GodRawData.CSV can not be open" message is displayed, the reference data file (GodRawData.CSV) for the liner matrix adjustment is not in the inside of the PC. Therefore, perform "7-1. Preparation (Get Reference Data)".

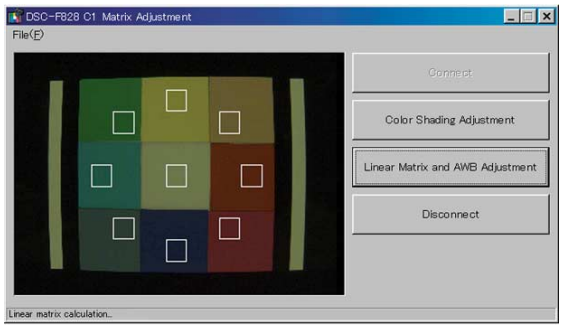

Fig. 6-1-39

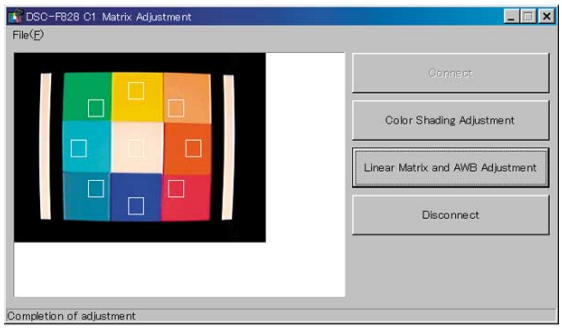

Fig. 6-1-40

9) When the "Completion of adjustment" message is displayed. Click the OK button.

Fig. 6-1-41

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8. CAMERA Adjustment 4

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. Picture Frame Setting
3. Color Reproduction Check
4. CCD Linearity Check
5. CCD White Defect Compensation Check
6. CCD Black Defect Compensation Check
7. Release of Data Setting during Camera Adj.

[Adjusting method]

1) Click the CAMERA Adjustment 4 Start button.
2) The Automatic Adjustment Program executes the "1. Data Setting during Camera Adj.".
3) Upon successful completion of "1. Data Setting during Camera Adj.", "2. Picture Frame Setting" is executed. The following message is displayed, and then referring to "Picture Frame Setting" (See page 6-16), set the subject and click the OK button.

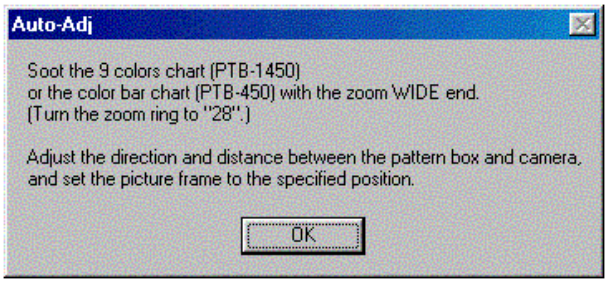
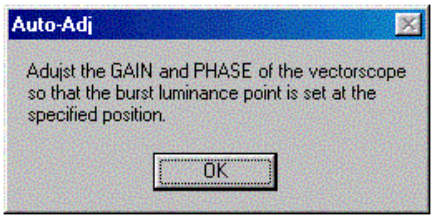

Auto-Adj
Soot the 9 colors chart (PTB-1450)
or the color bar chart (PTB-450) with the zoom WIDE end.
(Turn the zoom ring to "28".)
Adjust the direction and distance between the pattern box and camera,
and set the picture frame to the specified position.
OK

Fig. 6-1-42

4) After that, the next message is displayed. Using manual focus ring, adjust the focus.

Fig. 6-1-43

5) Click the OK button, and "3. Color Reproduction Check" will be executed. The following messages are displayed in order, and then operate the vectorscope to make a check with the color reproduction frame in accordance with the message.


Auto-Adj
Adujst the GAIN and PHASE of the vectorscope
so that the burst luminance point is set at the
specified position.
OK

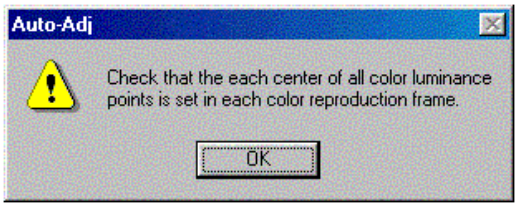


Fig. 6-1-44

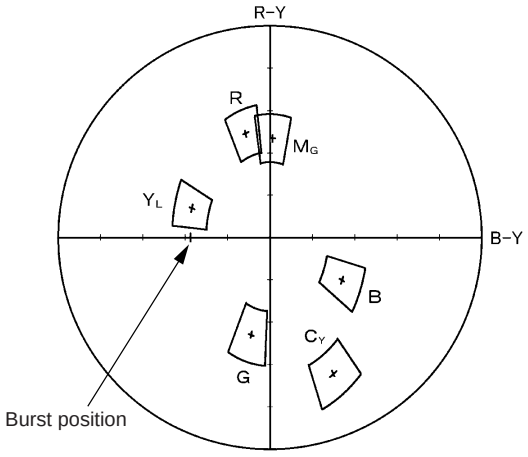


Fig. 6-1-45

6) Upon successful completion of "3. Color Reproduction Check", the following message is displayed. Change the chart in accordance with the message.

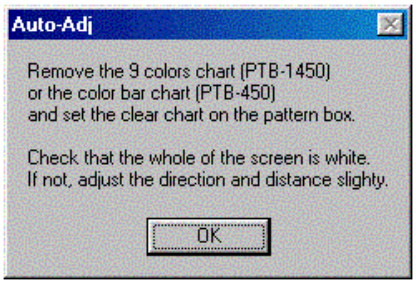

Auto-Adj
Remove the 9 colors chart (PTB-1450)
or the color bar chart (PTB-450)
and set the clear chart on the pattern box.
Check that the whole of the screen is white.
If not, adjust the direction and distance slighty.
OK

Fig. 6-1-46

7) Click the OK button, and the "4. CCD Linearity Check", "5. CCD White Defect Compensation Check" will be executed.

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8) Upon successful completion of “5. CCD White Defect Compensation Check”, the following message is displayed. Set the ZOOM in accordance with the message.

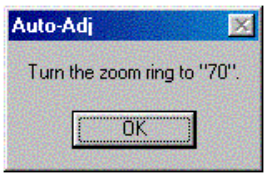

Fig. 6-1-47

9) Click the OK button, and the “6. CCD Black Defect Compensation Check”, “7. Release of Data Setting during Camera Adj.” will be executed.

10) Upon successful completion of all items of the CAMERA Adjustment 4, the following message is displayed. Click the OK button.

Fig. 6-1-48

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9. CAMERA Adjustment 5

Note: "CAMERA Adjustment 5" is available only once after the power is turned on. If the adjustment is retried, turn off the power and turn on again.

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. Strobe Adj.
3. AF Laser Output Adj.
4. Release of Data Setting during Camera Adj.

[Adjusting method]

1) Click the CAMERA Adjustment 5 Start button.
2) The Automatic Adjustment Program executes the "1. Data Setting during Camera Adj.".
3) Upon successful completion of the "1. Data Setting during Camera Adj.", the following message is displayed. Set the subject in accordance with the message.
   (For the Flash adjustment box, refer to "4. Preparing the Flash Adjustment Box" (see page 6-6).)

Fig. 6-1-49

4) Press the OK button, and the "2. Strobe Adj." will be executed.
5) During execution of "2. Strobe Adj.", the following message is displayed. After checking the flashing of strobe light, click the OK button. (This message is displayed 2 times during execution of adjustment.)

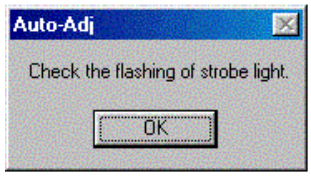

Fig. 6-1-50

6) Upon successful completion of "2. Strobe Adj.", "3. AF Laser Output Adj." is executed.
7) Upon successful completion of the "3. AF Laser Output Adj.", the "4. Release of Data Setting during Camera Adj." will be executed successively.
8) Upon successful completion of all items of the CAMERA Adjustment 5, the following message is displayed. Click the OK button.

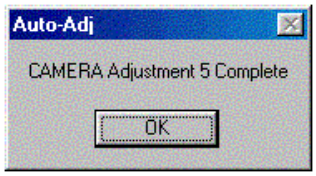

Fig. 6-1-51

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10. CAMERA Adjustment 6

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. AF Laser Axis Check
3. Release of Data Setting during Camera Adj.

[Adjusting method]

1) Click the CAMERA Adjustment 6 Start button.
2) The Automatic Adjustment Program executes the "1. Data Setting during Camera Adj.".
3) Upon successful completion of the "1. Data Setting during Camera Adj.", the following message is displayed. Set the subject in accordance with the message.
   (For the Flash adjustment box, refer to "4. Preparing the Flash Adjustment Box" (see page 6-6).)

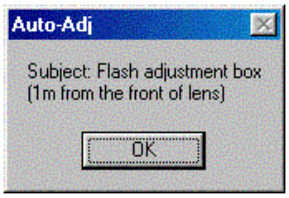

Fig. 6-1-52

4) Click the OK button, and the "2. AF Laser Axis Check" will be executed. The following message is displayed. Attach the AF Laser axis frame on the monitor TV screen in accordance with the message.

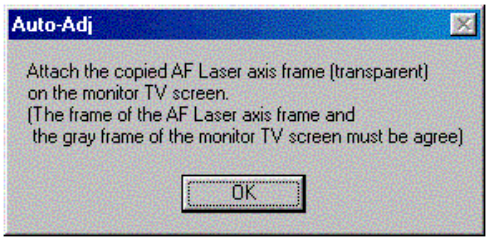
Auto-Adj
Attach the copied AF Laser axis frame (transparent)
on the monitor TV screen.
(The frame of the AF Laser axis frame and
the gray frame of the monitor TV screen must be agree)
OK

Fig. 6-1-53

5) If the OK button is clicked, the following message is displayed. Set the ZOOM to the WIDE end and click the OK button.

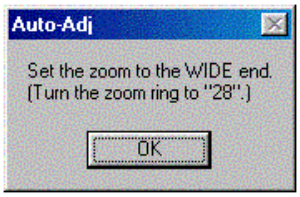

Fig. 6-1-54

6) After that, the next message is displayed. Check that all hologram patterns are within the inspection frame.

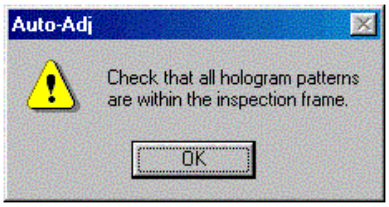

Fig. 6-1-55

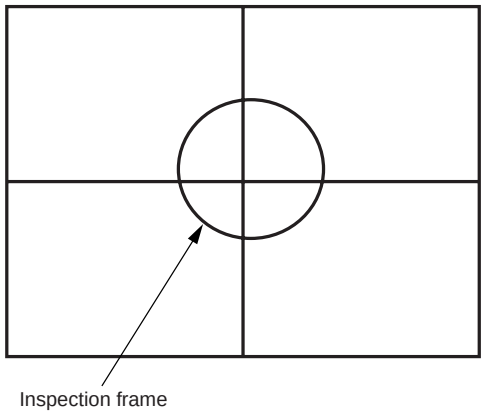

Fig. 6-1-56

7) If the OK button is clicked, the following message is displayed. Set the ZOOM to the TELE end and click the OK button.

Fig. 6-1-57

8) After that, the next message is displayed. Check that all hologram patterns are not unfocused.

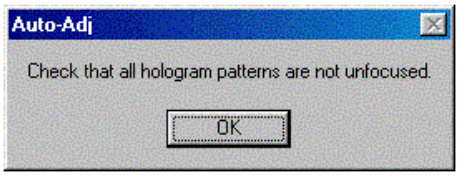

Fig. 6-1-58

9) Upon completion of "2. AF Laser Axis Check", "3. Release of Data Setting during Camera Adj." is executed.
10) Upon successful completion of all items of the CAMERA Adjustment 6, the following message is displayed. Click the OK button.

Fig. 6-1-59

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1-5. EVF SYSTEM ADJUSTMENTS

1-5-1. Function of Each Button on EVF System Adjustment Screen

Click the [EVF SYSTEM ADJUSTMENT] button on the Main Menu screen, and the "EVF SYSTEM ADJUSTMENT" screen in Fig. 6-1-60 will appear.

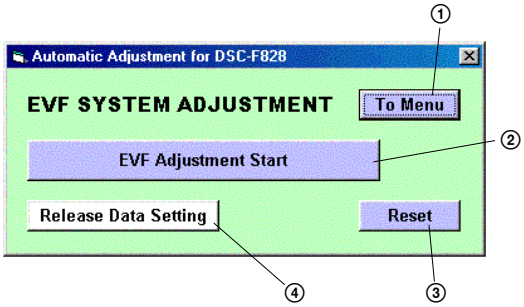

Fig. 6-1-60

① [To Menu] button
The Main Menu screen comes back.

② [EVF Adjustment Start] button
"EVF Adjustment" starts.

③ [Reset] button
This button functions same as the Reset button of the camera.

④ [Release Data Setting] button
The data setting at the adjustment is cancelled.
During the data setting, the button color changes from "white" to "red". When the data setting is cancelled, the button color returns to "white".
(Use this button when an error occurred in the EVF adjustment. If the adjustment completed successfully, the data setting is automatically cancelled and the button color returns to "white".)

1-5-2. Adjustment Items of EVF System Adjustment

The adjustment items of EVF system adjustment are as listed in Table 6-1-4. The Automatic Adjustment Program executes the adjustment items if the EVF Adjustment Start button is clicked.

Button Name	Adjustment	Signal	Page	Address
EVF Adjustment	EVF Initial Data Input	Arbitrary	8F	70, 71, 73 to 78, 7A, 7C
	VCO adj.		8F	73
	Bright adj.		8F	75
	Contrast adj.		8F	7C
	V-COM adj.		8F	74
	White Balance adj.		8F	78, 7A

Table 6-1-4

1-5-3. Adjusting Method

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during EVF Adj.
2. EVF Initial Data Input
3. VCO Adj.
4. Bright Adj.
5. Contrast Adj.
6. V-COM Adj.
7. White Balance Adj.
8. Release of Data Setting during EVF Adj.

[Adjusting method]

1) Click the [EVF Adjustment Start] button.
2) The Automatic Adjustment Program executes the items from "1. Data Setting during EVF Adj." to "6. V-COM Adj.".
3) Upon completion of "6. V-COM Adj.", "7. White Balance Adj." is executed. The following message is displayed, and then check that EVF screen is not colored.
If colored, change the data of page: 8F, address: 78 and 7A on the SEUS Operation screen to adjust so that the EVF screen is not colored.

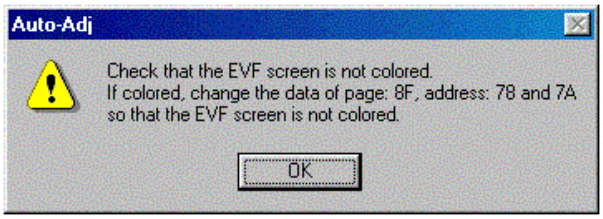
Auto-Adj
Check that the EVF screen is not colored.
If colored, change the data of page: 8F, address: 78 and 7A so that the EVF screen is not colored.
OK

Fig. 6-1-61

4) If the [OK] button is clicked, "8. Release of Data Setting during EVF Adj." will be executed.
5) Upon successful completion of all items the EVF adjustment, the following message is displayed. Click the [OK] button.

Fig. 6-1-62

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1-6. LCD SYSTEM ADJUSTMENTS

1-6-1. Function of Each Button on LCD System Adjustment Screen

Click the LCD SYSTEM ADJUSTMENT button on the Main Menu screen, and the "LCD SYSTEM ADJUSTMENT" screen in Fig. 6-1-63 will appear.

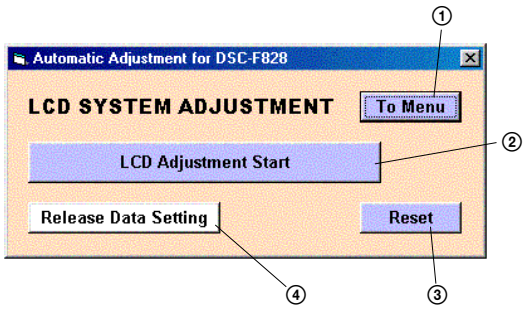

Fig. 6-1-63

① To Menu button
The Main Menu screen comes back.

② LCD Adjustment Start button
"LCD Adjustment" starts.

③ Reset button
This button functions same as the Reset button of the camera.

④ Release Data Setting button
The data setting at the adjustment is cancelled.
During the data setting, the button color changes from "white" to "red". When the data setting is cancelled, the button color returns to "white".
(Use this button when an error occurred in the LCD adjustment. If the adjustment completed successfully, the data setting is automatically cancelled and the button color returns to "white".)

1-6-2. Adjustment Items of LCD System Adjustment

The adjustment items of LCD system adjustment are as listed in Table 6-1-5. The Automatic Adjustment Program executes the adjustment items if the LCD Adjustment Start button is clicked.

Button Name	Adjustment	Signal	Page	Address
LCD Adjustment	LCD Initial Data Input	Arbitrary	8F	20, 21, 23 to 28, 2A, 2C
	VCO adj.		8F	23
	Contrast adj.		8F	2C
	V-COM adj.		8F	24
	White Balance adj.		8F	28, 2A

Table 6-1-5

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1-6-3. Adjusting Method

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during LCD Adj.
2. LCD Initial Data Input
3. VCO Adj.
4. Contrast Adj.
5. V-COM Adj.
6. White Balance Adj.
7. Release of Data Setting during LCD Adj.

[Adjusting method]

1) Click the LCD Adjustment Start button.
2) The Automatic Adjustment Program executes the items from "1. Data Setting during LCD Adj." to "4. Contrast Adj.".
3) Upon successful completion of the "4. Contrast Adj.", the following message is displayed during execution in "5. V-COM Adj.". On the SEUS screen, operate the UP/DOWN key so that the brightness of portions A and B on the LCD panel is equal. After the adjustment, click the OK button.

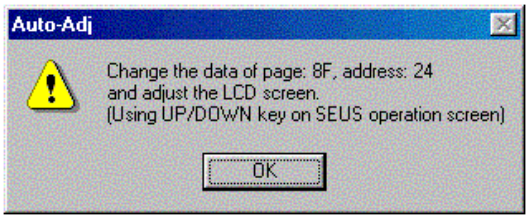

Fig. 6-1-64

4) Upon completion of "5. V-COM Adj.", "6. White Balance Adj." is executed. The following message is displayed, and then check that LCD screen is not colored.
If colored, change the data of page: 8F, address: 28 and 2A on the SEUS Operation screen to adjust so that the LCD screen is not colored.

Auto-Adj
Check that the LCD screen is not colored.
If colored, change the data of page: 8F, address: 28 and 2A
so that the LCD screen is not colored.
OK

Fig. 6-1-65

5) If the OK button is clicked, "7. Release of Data Setting during LCD Adj." will be executed.
6) Upon successful completion of all items the LCD adjustment, the following message is displayed. Click the OK button.

Fig. 6-1-66

SEUS operation screen

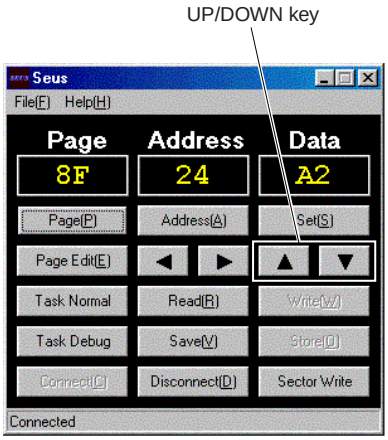

Fig. 6-1-67

Check on the LCD screen (V-COM Adj.)

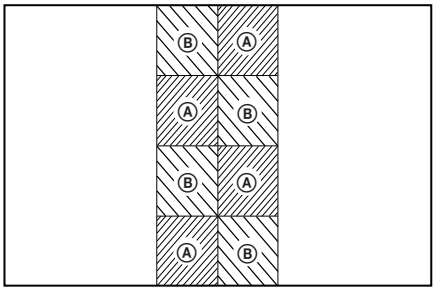

Fig. 6-1-68

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1-7. ERROR

In case of an error during the execution of adjustment, the Automatic Adjustment Program interrupts the processing at that point, and displays an error message, and then terminates the program execution there.

1-7-1. Error Message

When an error message is displayed, perform the remedy given below, and then retry adjustment. If the error message is displayed though the remedy was performed, the circuits will be faulty.

1. Connect Error

Fig. 6-1-69

Symptom	USB communication with the set is abnormal.
Cause	• USB cable is not inserted tightly. • Power supply is not installed correctly. • Communication with SEUS is abnormal.
Remedy	• Disconnect the USB cable once, and then reconnect it tightly and check that the set is in "USB Mode". • Install the power supply correctly. • Start the SEUS and click the Connect to check that the connection state is established.

2. RESET the CAMERA and Try Again

Fig. 6-1-70

Symptom	The camera is not ready for adjustment.
Cause	• Data error exists in the camera.
Remedy	• Reset the camera.

3. Adjustment Time Out

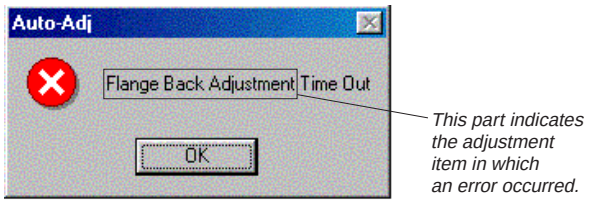

Fig. 6-1-71

Symptom	Adjustment does not finish within the specified time.
Cause	• Adjustment conditions are wrong. • Data error exists in the camera.
Remedy	• Check that the conditions such as a subject are correct. • Reset the camera.

4. Adjustment NG

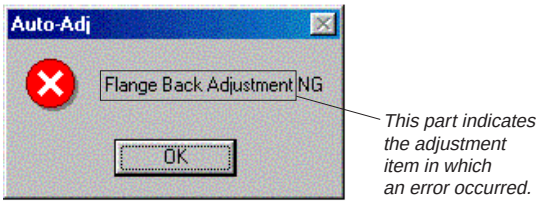

Fig. 6-1-72

Symptom	The adjusted data does not become the specified value.
Cause	• Adjustment conditions are wrong. • Data error exists in the camera.
Remedy	• Check that the conditions such as a subject are correct. • Reset the camera.

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5. Data Save Error

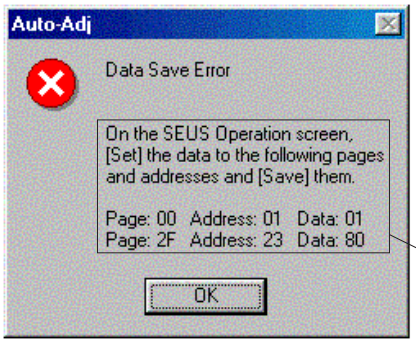
Auto-Adj
Data Save Error
On the SEUS Operation screen, [Set] the data to the following pages and addresses and [Save] them.
Page: 00 Address: 01 Data: 01
Page: 2F Address: 23 Data: 80
OK
How to cancel the data setting during adjustment is display here.

Fig. 6-1-73

Symptom	data cannot be saved normally. (The data setting during adjustment cannot be cancelled)
Cause	• Data writing to the flash memory failed. • Connection is faulty. • Power supply is not installed correctly.
Remedy	• On the SEUS Operation screen, Set the data to the pages and addresses displayed in the message, and Save them. (Cancel manually the data setting during adjustment.) • Check the connection. • Install the power supply correctly.

1-7-2. Precautions When an Error Occurred

The Automatic Adjustment Program sets the data for adjustment before the adjustment starts. Accordingly, if the adjustment terminates by an error, the data during the adjustment may be left in the camera.

Note 1: With this data left in the camera, the camera will not operate normally.

In this case, the Release Data Setting button is displayed in "red" on the screen as shown in Fig. 6-1-74 to Fig. 6-1-77. Click the Release Data Setting button to cancel the data setting. When the data setting is cancelled, the button color becomes "white".

Note 2: When "Data Save Error" occurred, the Release Data Setting button is displayed in "white".
To cancel the data setting, perform it on the SEUS Operation screen. How to cancel the data setting is displayed in the error message.

Video System Adjustment screen

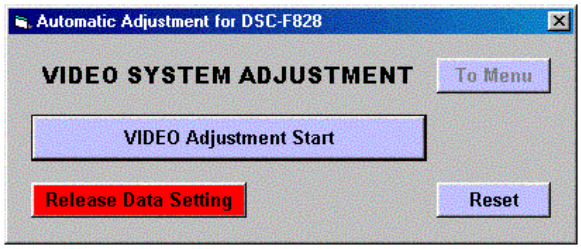

Fig. 6-1-74

Camera System Adjustment screen

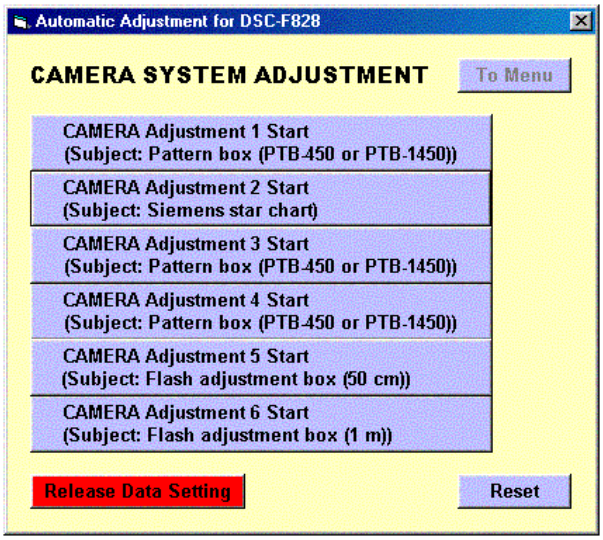
Automatic Adjustment for DSC-F828
CAMERA SYSTEM ADJUSTMENT
To Menu
CAMERA Adjustment 1 Start
(Subject: Pattern box (PTB-450 or PTB-1450))
CAMERA Adjustment 2 Start
(Subject: Siemens star chart)
CAMERA Adjustment 3 Start
(Subject: Pattern box (PTB-450 or PTB-1450))
CAMERA Adjustment 4 Start
(Subject: Pattern box (PTB-450 or PTB-1450))
CAMERA Adjustment 5 Start
(Subject: Flash adjustment box (50 cm))
CAMERA Adjustment 6 Start
(Subject: Flash adjustment box (1 m))
Release Data Setting
Reset

Fig. 6-1-75

EVF System Adjustment screen

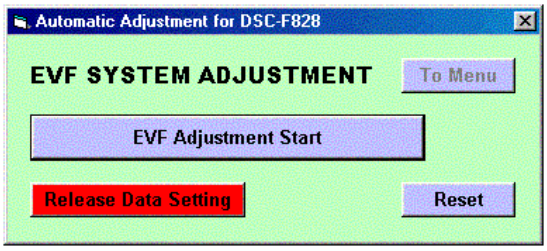

Fig. 6-1-76

LCD System Adjustment screen

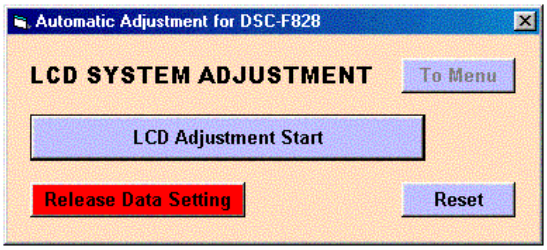

Fig. 6-1-77

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1-8. INITIALIZATION OF DATA

1. Initializing All Page Data

By performing the following procedure, data of all pages will be initialized.

Note: If all page data have been initialized, all adjustments need to be performed again.

Initializing Method:

1) Select page: 00, address: 01 and set data: 01.
2) Click [Sector Write] on the SEUS screen to display the SEUS SECTOR WRITE screen.
3) Check that the SET ID is "03".
4) Click [All] of the ALL SELECT buttons to select all pages. (Fig. 6-1-78 Ⓐ)
5) Click [Write] to write the initializing data to the flash memory of the camera.
6) Wait for 3 sec.
7) Click [Close] to close the SEUS SECTOR WRITE screen.
8) Select page: 8E, address: 00 and set data: 20.
9) Click [Save] on the SEUS screen.
10) Wait for more than 3 sec.

Processing after Completing Initializing

Order	Page	Address	Data	Procedure
1	20	00	29 [Set]	
2	20	01	29 [Set]	(Note)

Note: At this time, the camera is reset and the power is turns off once and then on again. Accordingly, the message "Receive Packet Error" is displayed on the SEUS screen, and the SEUS goes in "disconnect" state, but this is not a trouble. Click [Connect] on the SEUS screen to restore the "connected" state. (In case that the power does not turn on again, press the power button.)

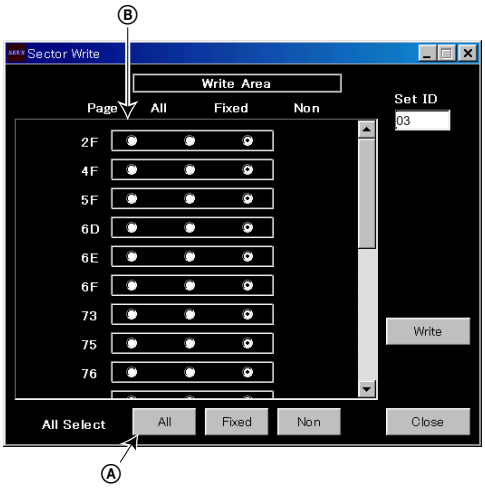

Fig. 6-1-78

2. Initializing Single Page Data

By performing the following procedure, data of the page that you want to initialize will be initialized.

Note 1: If the 6E or 6F page data have been initialized, the following adjustment needs to be performed again.
1) Camera system adjustments

Note 2: If the 8F page data have been initialized, the following adjustment needs to be performed again.
1) Video system adjustments
2) LCD system adjustments

Initializing Method:

1) Select page: 00, address: 01 and set data: 01.
2) Click [Sector Write] on the SEUS screen to display the SEUS SECTOR WRITE screen.
3) Check that the SET ID is "03".
4) Click "All" of the option buttons of target page. (Fig. 6-1-78 Ⓑ)
5) Click [Write] to write the initializing data to the flash memory of the camera.
6) Wait for 3 sec.
7) Click [Close] to close the SEUS SECTOR WRITE screen.
8) When 8E page is initialized, select page: 8E, address: 00 and set data: 20.
9) Click [Save] on the SEUS screen.
10) Wait for more than 3 sec.

Processing after Completing Initializing

Order	Page	Address	Data	Procedure
1	20	00	29 [Set]	
2	20	01	29 [Set]	(Note)

Note: At this time, the camera is reset and the power is turns off once and then on again. Accordingly, the message "Receive Packet Error" is displayed on the SEUS screen, and the SEUS goes in "disconnect" state, but this is not a trouble. Click [Connect] on the SEUS screen to restore the "connected" state. (In case that the power does not turn on again, press the power button.)

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6-2. SERVICE MODE

1. Setting the Test Mode

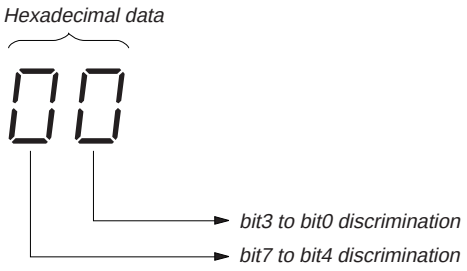
Page 2F	Address 23

Data	Function
80	Normal
11	Forced STILL mode power ON
12	Forced PLAY mode power ON
04	Forced MOVIE mode power ON

- Before setting the data, select page: 00, address: 01, and set data: 01.
- For page 2F, the data set is recorded in the non-volatile memory by saving data. In this case, take note that the test mode will not be exited even when the main power is turned off.
- After completing adjustments/repairs, release the data setting.
  1) Select page: 00, address: 01, and set data: 01.
  2) Select page: 2F, address: 23, and set data: 80.
  3) Save the data.
  4) Wait for more than 3 sec.
  5) Select page: 00, address: 01, and set data: 00.

2. Bit value discrimination

Bit values must be discriminated using the hexadecimal data for following items. Use the table below to discriminate if the bit value is “1” or “0”.



	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (R)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

Examples: If the hexadecimal data is “8E”, the bit values for bit7 to bit4 are shown in the Ⓐ column, and the bit values for bit3 to bit0 are shown in the Ⓑ column.

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3. Switch check (1)

Page 20	Address 80

Bit	Function	When bit value=1	When bit value=0
0	POWER switch (XPWER ON) (Control switch block (TOP))	OFF	ON

Using method:
1) Select page: 20, address: 80.
2) Read the data. By discriminating the bit value of the data, the state of the switch can be discriminated.

4. Switch check (2)

Page 20	Address 90 to 96

Using method:
1) Select page: 20, address: 90 to 96.
2) Read the data. By discriminating the data, the pressed key can be discriminated.

Address	Data						
	00 to 0B	0C to 26	27 to 47	48 to 72	73 to A4	A5 to DC	DD to FF
90 (KEY AD0) (IC401 J6)	Control button DOWN (Control switch block (MID)) S008	Control button UP (Control switch block (MID)) S006	DISPLAY WINDOW BACKLIGHT (Control switch block (TOP)) S003	WHITE BALANCE (Control switch block (TOP)) S004	EXPOSURE (Control switch block (TOP)) S005	COMPACT FLASH (Control switch block (UNDER)) S006	MEMORY STICK (Control switch block (UNDER)) S006
91 (KEY AD1) (IC401 H6)	Control button RIGHT (Control switch block (MID)) S003	Control button LEFT (Control switch block (MID)) S010	Control button CENTER (Control switch block (MID)) S007	AE LOCK (Control switch block (MID)) S012	MENU (Control switch block (MID)) S002		No key input
92 (KEY AD2) (IC401 G6)	QUICK REVIEW (Control switch block (UNDER)) S005	DIGITAL ZOOM (Control switch block (UNDER)) S004	SELF TIMER (Control switch block (UNDER)) S003	SCREEN STATUS (Control switch block (UNDER)) S002		FINDER (Control switch block (UNDER)) S001	LCD (Control switch block (UNDER)) S001
93 (KEY AD3) (IC401 J7)	OPEN (FLASH) (SW-410 board) (S001)	FLASH (SW-410 board) (S002)	METERING MODE (SW-410 board) (S005)	MACRO (SW-410 board) (S003)	BURST/BRACKET (SW-410 board) (S006)	FOCUS AUTO (SW-410 board) (S004)	FOCUS MANUAL (SW-410 board) (S004)
94 (KEY AD4) (IC401 H7)	NIGHT SHOT/ NIGHT FRAMING (SW-410 board) (S007)						No key input
95 (MODE DIAL 0) (IC401 J8)	Mode dial STILL (AE-S) (Control switch block (TOP))	Mode dial STILL (AE-A) (Control switch block (TOP))	Mode dial STILL (MANUAL) (Control switch block (TOP))	Mode dial STILL (SCN) (Control switch block (TOP))	Mode dial MOVIE (Control switch block (TOP))		No key input
96 (MODE DIAL 1) (IC401 J9)	Mode dial STILL (AUTO) (Control switch block (TOP))	Mode dial STILL (P AUTO) (Control switch block (TOP))	Mode dial PB (Control switch block (TOP))	Mode dial SET UP (Control switch block (TOP))			No key input

5. Switch check (3)

Page 60	Address B9

Function	When data = 11	When data = 01
FLASH OPEN DETECT switch (LS-067 board S001)	Close	Open

Using method:
1) Select page: 60, address: B9.
2) Read the data. By discriminating the data, the state of the switch can be discriminated.

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6. Switch check (4)

Page 80	Address 13

Function	When data = 00	When data = 01	When data = 02
Shutter button (XAE LOCK SW) (Control switch block (TOP))	OFF	ON	ON
Shutter button (XSHTR ON SW) (Control switch block (TOP))	OFF	OFF	ON

Using method:

1) Select page: 80, address: 13.
2) Read the data. By discriminating the data, the state of the switches can be discriminated.

7. Switch check (5)

Page 80	Address 14

Function	When data = 00	When data = 01
CF COVER switch (Control switch block (CENTER))	Open	Close

Using method:

1) Select page: 80, address: 14.
2) Read the data. By discriminating the data, the state of the switch can be discriminated.

8. Switch check (6)

Page 80	Address 15

Using method:

1) Select page: 80, address: 15.
2) By discriminating the data, the rotation of the control dial can be discriminated.

Control dial (Control switch block (CENTER))	Data
When rotated in the left direction.	01
When rotated in the right direction.	02

9. LED, Segment LCD check

Page 20	Address 04
Page 80	Address 12
Page 8E	Address FE

Using method:

1) Select page: 00, address: 01, set data: 01.
2) Select page: 20, address: 04, set data: 02.
3) Select page: 8E, address: FE, set data: 20.
4) Select page: 80, address: 12, set data: 01.
6) Check that all LED (Power, Charge, Tally, Access, Segment LCD back light) are lit.
7) Select page: 20, address: 04, set data: 08.
8) Check that all segment of the segment LCD are lit.
9) Select page: 20, address: 04, set data: 00.
10) Select page: 80, address: 12, set data: 00.
11) Select page: 8E, address: FE, set data: 00.
12) Select page: 00, address: 01, set data: 00.

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10. Record of Use check

Page 4F	Address 94 to 97

Address	Function	Remarks
94	Recording counter (Hexadecimal)	1000000-digit and 1000000-digit
95		1000000-digit and 10000-digit
96		1000-digit and 100-digit
97		10-digit and 1-digit

Using method:

1) The recording counter data is displayed at page: 4F, addresses: 94 to 97. These data are named D_{94}, D_{95}, D_{96} and D_{97} respectively.
2) Calculate the recording counter (N) using following equation. (Hexadecimal calculation)
   $N = D_{97} + D_{96} \times 100 + D_{95} \times 10000 + D_{94} \times 1000000$

11. Self Diagnostics Log check

Page 20	Address B0 to B8

Address	Initial value	Function
B0	00	“Repaired by” code (Occurred 1st time) *1
B1	00	“Block function” code (Occurred 1st time)
B2	00	“Detailed” code (Occurred 1st time)
B3	00	“Repaired by” code (Occurred 2nd time) *1
B4	00	“Block function” code (Occurred 2nd time)
B5	00	“Detailed” code (Occurred 2nd time)
B6	00	“Repaired by” code (Occurred 3rd time) *1
B7	00	“Block function” code (Occurred 3rd time)
B8	00	“Detailed” code (Occurred 3rd time)

*1: “C” ⟶ “01”, “E” ⟶ “03”

Using method:

1) The self diagnostics log is displayed at page: 20, addresses: B0 to B5.
   Note: These data will be erased when the lithium battery (LR-018 board) is removed.

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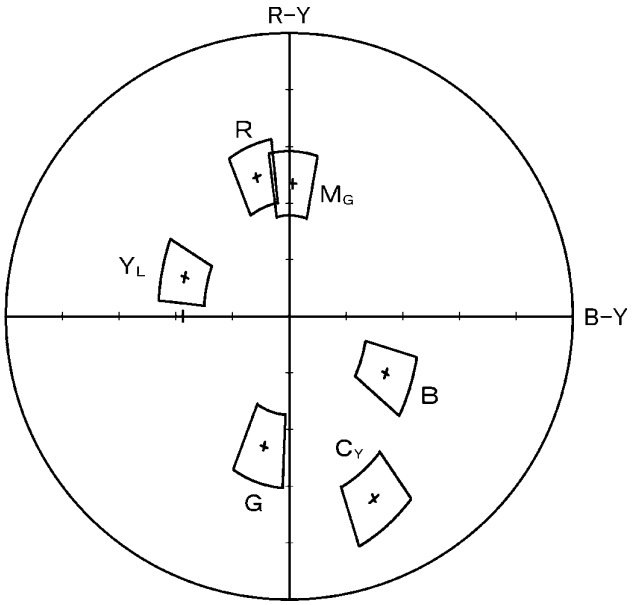
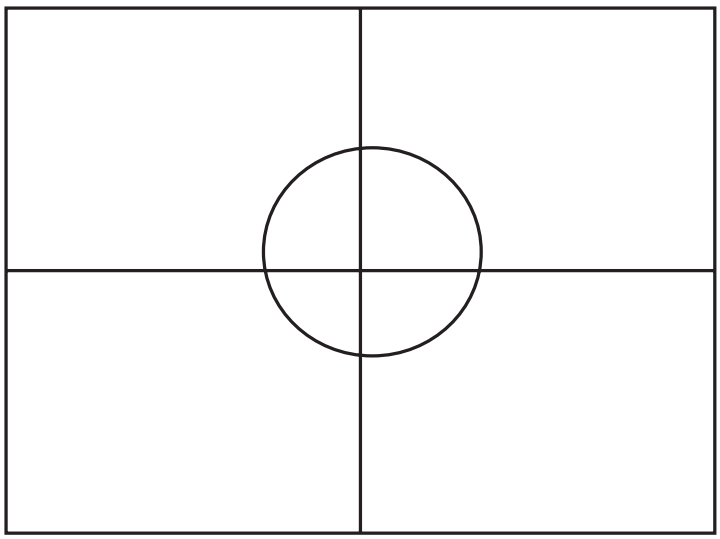
Take a copy of CAMERA COLOR REPRODUCTION FRAME with a clear sheet for use.

⟨FOR CAMERA COLOR REPRODUCTION CHECK⟩



Take a copy of AF LASER AXIS FRAME with a clear sheet for use.

⟨AF LASER AXIS FRAME⟩



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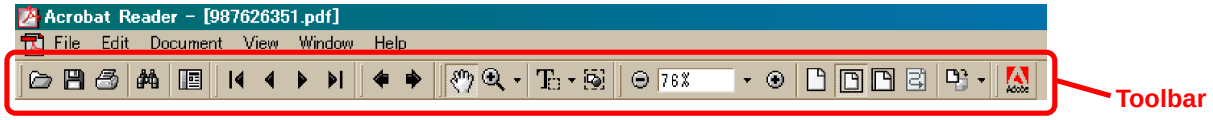
[Description of main button functions on toolbar of the Adobe Acrobat Reader Ver5.0 (for Windows)]



Printing a text

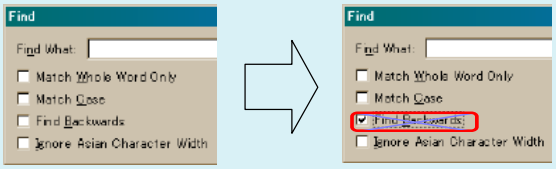
1. Click the Print button .
2. Specify a printer, print range, number of copies, and other options, and then click [OK].

Application of printing:
To set a range to be printed within a page, select the graphic selection tool and drag on the page to enclose a range to be printed, and then click the Print button.

Finding a text

1. Click the Find button .
2. Enter a character string to be found into a text box, and click the [Find]. (Specify the find options as necessary)

Application to the Service Manual:
To execute "find" from current page toward the previous pages, select the check box "Find Backward" and then click the "Find".



3. Open the find dialog box again, and click the [Find Again] and you can find the matched character strings displayed next. (Character strings entered previously are displayed as they are in the text box.)

Application to the Service Manual:
The parts on the drawing pages (block diagrams, circuit diagrams, printed circuit boards) and parts list pages in a text can be found using this find function. For example, find a Ref. No. of IC on the block diagram, and click the [Find Again] continuously, so that you can move to the Ref. No. of IC on the circuit diagram or printed circuit board diagram successively.
Note: The find function may not be applied to the Service Manual depending on the date of issue.

Switching a page

- To move to the first page, click the .
- To move to the last page, click the .
- To move to the previous page, click the .
- To move to the next page, click the .

Reversing the screens displayed once

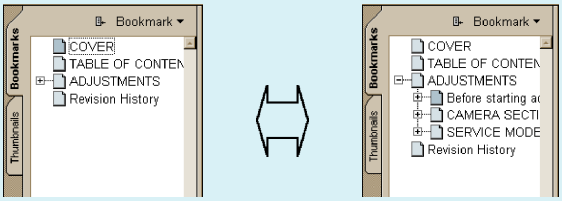
- To reverse the previous screens (operation) one by one, click the .
- To advance the reversed screens (operation) one by one, click the .

Application to the Service Manual:
This function allows you to go and back between circuit diagram and printed circuit board diagram, and accordingly it will be convenient for the voltage check.

Moving with link

1. Select either palm tool , zoom tool , text selection tool , or graphic selection tool .
2. Place the pointer in the position in a text where the link exists (such as a button on cover and the table of contents page, or blue characters on the removal flowchart page or drawing page), and the pointer will change to the forefinger form .
3. Then, click the link. (You will go to the link destination.)

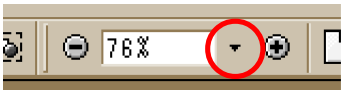
Moving with bookmark:
Click an item (text) on the bookmark pallet. and you can move to the link destination. Also, clicking can display the hidden items.
(To go back to original state, click)



Zooming or rotating the screen display

"Zoom in/out"

- Click the triangle button in the zoom control box to select the display magnification. Or, you may click or for zooming in or out.



"Rotate"

- Click rotate tool , and the page then rotates 90 degrees each.

Application to the Service Manual:
The printed circuit board diagram you see now can be changed to the same direction as the set.

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Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2003.12	Official Release	—	—
1.1	2004.04	Revised-1	Addition of adjustments	Yes
1.2	2004.06	Supplement-1 (S1 PV03-022)	Addition of Automatic Adjustment Program	No
1.3	2004.07	Correction-1	• Correction of “Before starting adjustment” • Correction of List of Service Tools S.M. correction: Page 6-1, 6-3	Yes

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